FRTC Modernization EIS

Supporting Study
Socioeconomic Report

This Page Intentionally Left Blank

TECHNICAL REPORT

UCED 2018/19-04

Economic Impact Analysis Report: Fallon Range Training Complex Modernization

UNIVERSITY OF NEVADA, RENO

Economic Impact Analysis Report: Fallon Range Training Complex Modernization

Report Prepared by

Thomas R. Harris, Ph.D.

Angelo Sisante

Brian Fogarty

Inga Sullivan

Thomas R. Harris is a Professor in the Department of Economics and Director of the University Center for Economic Development, College of Business at the University of Nevada, Reno.

Angelo Sisante is a Graduate Research Associate in the Department of Economics at the University of Nevada, Reno.

Brian Fogarty is a Graduate Research Associate in the Department of Economics at the University of Nevada, Reno.

Inga Sullivan Research Associate in the University Center for Economic Development at the University of Nevada, Reno.

University Center for Economic Development

Department of Resource Economics

University of Nevada, Reno

Reno, Nevada

(775) 784-1681

November 2018

Photo from commons.wiki.org

This publication, *Economic Impact Analysis Report: Fallon Range Training Complex Modernization*, was published by the University of Nevada Center for Economic Development. Funds for the publication were provided by the United States Navy and ManTech International Corporation. This publication's statements, findings, conclusions, recommendations, and/or data represent solely the findings of the author and do not necessarily represent the views of the United States Department of Commerce, the Economic Development Administration, University of Nevada, or any reference sources used or quoted by this study. Reference to research projects, programs, books, magazines, or newspaper articles does not imply an endorsement or recommendation by the author unless otherwise stated. Correspondence regarding this document—Other than comments being offered in conjunction with review of the Department of Navy's Fallon Range Training Complex Modernization Environment Impact Statement (EIS), which should be submitted to the Navy per instructions concerning the EIS—should be sent to:

Thomas R. Harris, Director

University Center for Economic Development

University of Nevada, Reno

Department of Economics

Mail Stop 204

Reno, Nevada 89557

Phone: 775-784-1681

UCED

University of Nevada, Reno

College of Business

Department of Economics

This page intentionally left blank.

Table of Contents

Figures

Tables

Acronyms

AUM	Animal unit months
B	Bravo
BEA REIS	Bureau of Economic Analysis Regional Economic Information System
BLM	Bureau of Land Management
DETR	Department of Employment, Training, and Rehabilitation
DVTA	Dixie Valley Training Area
EIS	Environmental Impact Statement
FRTC	Fallon Range Training Complex
IMPLAN	Impact Analysis for Planning
NAICS	North American Industrial Classification Sector
NAS	Naval Air Station
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
OHV	Off-highway vehicle
PILT	Payment in Lieu of Taxes
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

The Commander, United States (U.S.) Pacific Fleet, a Command of the U.S. Navy (hereinafter referred to as the Navy), proposes to modernize the land and airspace configurations of the Fallon Range Training Complex (FRTC) in northwest Nevada. The Proposed Action includes a renewal of a prior public land withdrawal, withdrawal and reservation of additional public land, and acquisition of additional non-federal land. The Navy, as part of its land withdrawal expansion, will evaluate three potential expansion alternative actions and a No Action Alternative. The No Action Alternative will not be evaluated in this socioeconomic impact analysis.

This Economic Impact Analysis Report is for the purposes of analyzing environmental consequences to the regional economy under the National Environmental Policy Act and is not directly related to any potential payments that could be made in the future. The amount and decision on any such payments would be subject to a separate implementation process.

The Economic Impact Assessment Report assesses and compares the potential economic impacts of alternative expansions proposed for the FRTC. The analysis estimates the economic, employment, and labor income impacts of the three alternatives. The study area is confined to counties local to the FRTC, where impacts from the Proposed Action are most likely to occur: Churchill, Lyon, Mineral, Nye, Lander, and Pershing County of Nevada. The study focuses heavily on Churchill County because the majority of the proposed land expansion area would occur in that county.

An analysis of population, housing, and the regional economy for Churchill, Mineral, Lyon, Nye, and Pershing County is included because the expansion touches these five counties. The populations of Lyon and Nye Counties are growing faster than the state of Nevada's rate of growth. However, Churchill and Pershing Counties' populations are growing slower than the state of Nevada's, while Mineral County's population is actually shrinking. The city of Fallon's population is growing faster than the county.

Estimations of the economic, employment, and household income impacts as a result of changes in study area's economic activity from the Fallon Range Training Complex Modernization were derived from input-output modeling techniques. While they may not be the

largest sectors for employment, agriculture, mining, geothermal, and recreation and tourism are the important industries in the region and the focus of this study.

Because the FRTC Modernization would not occur until at least 2021, projected employment from 2020 to 2021 could be impacted by the expansion. The estimated loss in employment from the FRTC Modernization was analyzed and to what extent projected employment would be impacted by the FRTC Modernization was determined for affected counties.

Since agriculture (specifically grazing) and recreation and tourism are such a large part of the study area's economy, any changes in economic activity to these industries are important. Some of the counties surrounding the FRTC Modernization include some of Nevada's top agricultural counties and federally owned grazing lands are integral to the livestock operations. Counties in which federal grazing districts are located may receive a portion of certain grazing-related funds received by the U.S. the authority of the Taylor Grazing Act (43 U.S.C. section 315(i)). The U.S. Treasury distributes the funds to the State, which then distributes the funds to the relevant counties as determined by the State Legislature. Since the funds allocated to counties vary annually, the Navy will continue to evaluate how to factor such amounts into its discussion of potential impacts to local government revenue streams.

As a result of implementing the FRTC Modernization, portions of active grazing allotments on federal land would be closed to grazing. These closures are projected to result in lost Animal Unit Months (AUMs), decreased values of output, and a reduction in jobs and income within the impacted counties. Because ranching operations have economic linkages with other economic sectors, changes in public land grazing would have direct and secondary impacts on total economic, employment, and labor income on the local economy. In the context of the FRTC modernization, it is challenging to determine a preferred approach to valuation of the affected AUMs. Therefore, it is difficult to estimate the value of a grazing permit on Federal land. The loss of some permitted grazing under any of the action alternatives would be highly localized, and the consequences in terms of the value of this loss would depend on the individual decisions made by the individual ranchers affected by any loss.

The same is true for recreation and tourism (including hunting). There are linkages between recreation and tourism with other local economic sectors. Recreational activities include

small and big game hunting. Under each of the action alternatives, there would be a potential reduction in the number of hunting tags and an associated loss in revenues from a reduction of tags to the state. The loss includes state revenue and matching federal Pittman-Robinson (PR) Act grant dollars. When combined, these two sources constitute the majority of funding for habitat and wildlife conservation projects. In addition, economic impacts from reduced access for hunting can affect retail sales by resident and non-resident hunters (hunters spend money on hotels, gas, food, etc.). A reduction in retail sales has a ripple effect on employment in the local economy. With the potential lost economic impacts from reduced access for hunting that affects retail sales by resident and non-resident hunters, there are also potential impacts associated with a loss in employment and labor income and total value of output with the lost jobs.

Geothermal and mining operations are also important to the study area's economy. Within the proposed study area, there is one active Bureau of Land Management (BLM) geothermal lease and one active geothermal field. It is reasonable and foreseeable that, although impossible to definitively quantify, there may be lost opportunities for geothermal developments in the FRTC expansion area. In addition, there is potential for lost economic opportunity if reasonably foreseeable locatable mineral developments in the FRTC expansion area are foregone. As such, these foreseeable lost opportunities could have economic impacts, particularly employment and household impacts.

This report also analyzes impacts related to Payment in Lieu of Taxes (PILT), which are federal payments to local governments to help offset losses in property taxes due to non-taxable federal lands within their boundaries. By withdrawing public lands, there is potential for lost revenues from reduced PILT to impacted Nevada counties. For this analysis, impacts to county level PILT payments were estimated from Fiscal 2018 data (under Formula A) for Churchill, Mineral, Lyon, Nye, and Pershing counties. Payments are based on population, receipt-sharing payments, and the amount of federal land in the county. The maximum payment in each county is capped based on its population. Based on the analysis, only Lyon County would be impacted by revenues lost from reduced PILT. Given that the proposed withdrawal is not enacted until 2021, it is difficult to determine the impact on future county PILT payments. PILT payments are initiated by the US Congress and procedures to calculate PILT may change or even PILT may not be funded by 2021.

Considering an interindustry framework, all of these impacts would have indirect and induced effects that extend beyond their exclusive economic sector. Compared to the other counties, Churchill County was projected to experience the greatest economic impacts from the FRTC Modernization. However, Naval Air Station (NAS) Fallon also plays an important role in contributing to Churchill County's economy.

1. INTRODUCTION

The Commander, United States (U.S.) Pacific Fleet, a Command of the United States Navy (hereinafter referred to as "the Navy") proposes to modernize the land and airspace configurations of the Fallon Range Training Complex (FRTC) in northwest Nevada. The Proposed Action would:

- Renew the current public land withdrawal of up to 202,864 acres which expires in November 2021
- Withdraw and reserve for military use up to approximately 618,727 acres of additional public land
- Acquire up to approximately 65,153 acres of private or state owned (non-federal) land

The Navy as part of its proposed land withdrawal expansion will evaluate three potential expansion alternatives. A socioeconomic analysis will be completed to provide informational background for the withdrawal Environmental Impact Statement (EIS) for Naval Air Station (NAS) Fallon. The proposed alternative areas are:

- Alternative 1: Full modernization of the FRTC, including the expansion of all bombing ranges and training areas, the construction of range infrastructure, and the expansion and reconfiguration of Special Use Airspace.
- Alternative 2: Full modernization of the FRTC with managed access, including managed hunting on B-17, geothermal and leasable material exploration on Dixie Valley Training Area (DVTA), and coordinated off-road access.
- Alternative 3: Includes all activities and access to land withdrawals described in Alternative 2 of the EIS but includes a repositioning of withdrawal land around B-17 with the exception of the DVTA area south of U.S. 50, which would not be withdrawn under Alternative 3.

If the No Action Alternative of the EIS were selected, neither the land withdrawal renewal or the new withdrawal and acquisition of land would occur. In this case, the Navy would have to reevaluate the mission of the Naval Air Station Fallon. A reevaluation means all training activities that require use of aviation or ground range ordnance would likely cease following the expiration of the existing land withdrawal in November 2021. Some range activities that only require Military Operating Areas, which are independent of the land withdrawal (e.g., non-firing

air combat maneuvers, search and rescue, close air support), could still be performed. The No Action Alternative will not be evaluated in this socioeconomic impact analysis.

The Economic Impact Assessment Report will assess and compare the potential socioeconomic impacts of alternative expansions proposed for the FRTC. The economic impact analysis will estimate the economic, employment, and labor income impacts of the three alternatives. Because FRTC is the only location for examination, these impacts will be local to the study area within the FRTC.

2. OVERVIEW OF THE STUDY AREA

Fallon, Nevada, is the largest metropolitan area in Churchill County and serves as the county seat. The cities of Fernley and Silver Springs, both in Lyon County, are the two largest nearby cities. Fernley is located approximately 28 miles northwest of Fallon along U.S. Route 50 (Alternate), and Silver Springs is located just under 25 miles to the southwest of Fallon, off of U.S. Route 50. Outside of the cities, the region is primarily rural and sparsely populated.

The FRTC consists for four live-fire ranges, Bravo (B)-16, B-17, B-19, and B-20, and one non-firing range training, the DVTA. The FRTC is located in northern Nevada and encompasses approximately 223,562 acres of training land and 12,256 square nautical miles of airspace. The FRTC airspace overlies large parts of Churchill, Lander, and Eureka counties, as well as small portions of Pershing County in the north, Nye County in the south, Elko County in the east, Mineral County in the southwest, and Lyon and Washoe Counties in the west (U.S. Navy, 2015). All of the Bravo ranges are located within Churchill County; however, proposed expansion areas extend into portions of Lyon, Mineral, Nye, and Pershing counties. The clear majority of the proposed land expansion areas are located in Churchill County. The expansion area south of B-17 extends into Mineral and Nye counties, the expansion area west of B-16 extends into Lyon County, and the expansion area north of B-20 extends into Pershing County.

For the analysis, the study area consists primarily of Churchill, Lyon, Mineral, Nye and Pershing Counties because they would be directly affected by the Proposed Action (Figure 1). However, several other counties are indirectly affected by the expansion and will be discussed in this study. Lander County is not under the airspace but includes the base property for a grazing permit that would be impacted by Animal Unit Month (AUM) reductions.

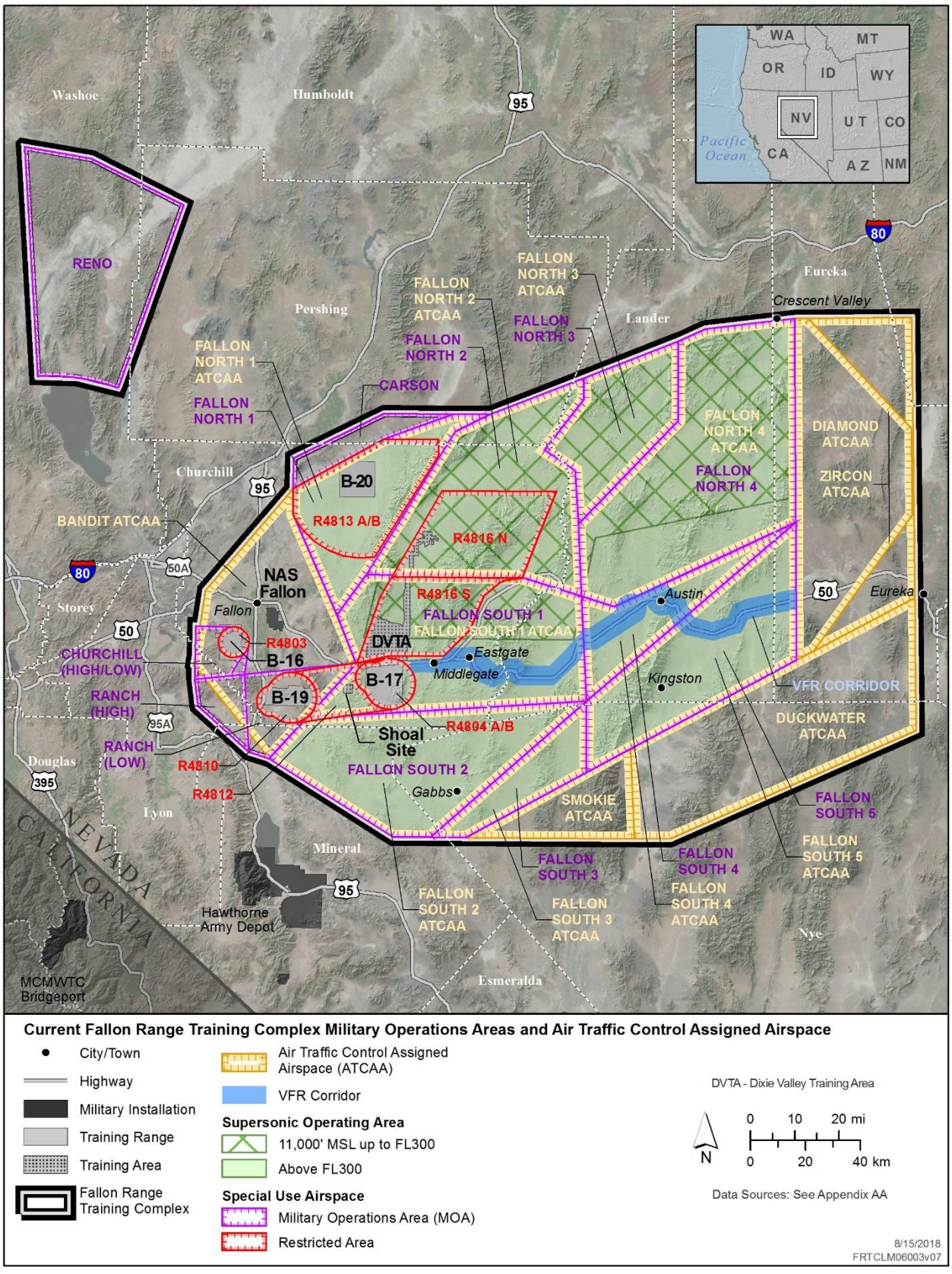

Figure 1. Fallon Range Training Complex Study Area

Likewise, Plumas County in California also includes a base property for a grazing permit that would be impacted by AUM reductions. Therefore, these counties are discussed in the Agricultural Impacts Section. Eureka, Elko, and Washoe County are only under the airspace and FRTC Modernization would not impact its ground resource-based economic activities (e.g., grazing, mining, recreation).

For the areas outside of Churchill County, only the socioeconomic resources potentially affected are discussed. For instance, Nye County is not affected by AUM reductions and will not be discussed in the Agricultural Impacts Section.

2.1 Population and Demographics

Table 1 presents population characteristics for the State of Nevada, Churchill County, and the City of Fallon, Lyon County, Mineral County, Nye County, and Pershing County. The reported data from U.S. Census in 2000 and 2010 depicts population trends between these two time series and projected population growth for 2020 and 2030.

2.1.1 Churchill County

Churchill County is approximately 3,144,320 acres. In 2010, approximately 35 percent of Churchill County's population resided in the City of Fallon. Between 2000 and 2010, the population of the City of Fallon grew by 14.2 percent, which was higher than Churchill County's rate of growth (3.7 percent) but less than Nevada's rate of growth (35.1 percent) (Table 1). Continued county population growth is expected through the year 2030. More specifically, Churchill County's total population is expected to increase by nearly 26 percent from 2010 to 2030, while the State's population is projected to increase to 3.2 million, which is a slower rate over the same time period (19 percent). Projections of population growth for the City of Fallon to 2020 and 2030 are not available. However, the population was estimated to be 8,410 in 2016 (U.S. Census Bureau, 2016b).

Table 1. Population Trends in Counties Within Study Area

Jurisdiction	2000[1]	2010[2]	Percent Change 2000–2010	2020 Projection[3]	2030 Projection[3]	Expected Percent Change 2010–2030[4]
Counties						
Churchill County	23,982	24,877	3.7%	27,299	31,223	25.5%
Lyon County	34,501	51,980	50.7%	55,107	59,919	15.3%
Mineral County	5,071	4,772	-5.9%	3,960	4,277	-10.4%
Nye County	32,485	43,946	35.3%	45,618	48,093	9.4%
Pershing County	6,693	6,753	0.9%	6,794	6,498	-3.8%
Washoe County	339,486	421,407	24.1%	469,422	535,216	27.0%
Communities						
City of Fallon	7,536	8,606	14.2%	(X)	(X)	(X)
Gabbs	(X)	269	(X)	(X)	(X)	(X)
State						
Nevada	1,998,257	2,700,551	35.2%	2,959,642	3,222,107	19.3%

Note: (X) = the estimate does include city projections and data are not available.
Sources:
[1]U.S. Census Bureau (2000a, 2000b, 2000c)
[2]U.S. Census Bureau (2010a, 2010b, 2010c)
[3]Nevada State Demographers Office (2014)
[4]U.S. Census Bureau (U.S. Census Bureau, 2015a, 2015b, 2015c, 2015d)

The population associated with NAS Fallon includes approximately 1,423 civilian and military personnel who are permanently stationed on the base (U.S. Department of the Navy, 2014). In addition, up to 20,000 transient personnel visit the base annually to participate in training programs at NAS Fallon (Churchill County, 2015).

2.1.2 Lyon County

Lyon County covers approximately 1,290,565 acres. Between 2000 and 2010, the population of the county grew by over 50 percent, which was higher than Nevada's rate of growth (35.1 percent) for the same time period (U.S. Census, 2000a and 2010a). Population growth in the study area is expected to continue to increase through the year 2030, though at a lower rate. More specifically, Lyon County's total population is expected to increase by

15.3 percent from 2010 to 2030, while the State's population is projected to increase to 3.2 million, which is a faster rate over the same time period (19 percent) (Nevada State Demographers Office, 2014).

2.1.3 Mineral County

Mineral County covers approximately 2,440,281 acres. Between 2000 and 2010, the population of the county shrank by 6.9 percent, which was less than Nevada's rate of growth (35.1 percent) for the same time period (U.S. Census, 2000a and 2010a). Population growth in the study area is expected to continue to decrease through the year 2030. More specifically, Mineral County's total population is expected to drop by nearly 10.4 percent from 2010 to 2030, while the State's population is projected to increase to 3.2 million, which is a faster rate over the same time period (19 percent) (Nevada State Demographers Office, 2014).

2.1.4 Nye County

Nye County covers approximately 11,621,701 acres. It is the third-largest county by area in the United States. Between 2000 and 2010, the population of the county increased by 35.3 percent, which is approximately the same as the State of Nevada's rate of growth (35.1 percent) for the same time period (U.S. Census, 2000a and 2010a). Nye County's total population is expected to increase by 9.4 percent from 2010 to 2030, while the State's population is projected to increase to 3.2 million, which is a faster rate over the same time period (19 percent) (Nevada State Demographers Office, 2014).

2.1.5 Pershing County

Pershing County covers approximately 3,883,141 acres. Between 2000 and 2010, the population of the county grew by 0.9 percent, which was less than Nevada's rate of growth (35.1 percent) for the same time period (U.S. Census, 2000a and 2010a). Population growth in the study area is expected to decrease through the year 2030. More specifically, Pershing County's total population is expected to drop by nearly 4 percent from 2010 to 2030, while the State's population is projected to increase to 3.2 million, which is a faster rate over the same time period (19 percent) (Nevada State Demographers Office, 2014).

2.2 Housing

Table 2 shows housing occupancy type and vacancy trends for the counties within the Study Area while Table 3 presents the housing occupancy for selected cities and the State of Nevada from U.S. Census in 2000 and 2010 and 5-year estimates from the American Community Survey in 2015. Between 2000 and 2010, the total number of housing units in the three census areas increased. The trend continued through 2016 for the State, but a slight decrease of 1.3 percent is estimated for Churchill County and 2 percent for the City of Fallon in 2015 (Tables 2 and 3). Overall, the number of housing units increased between 2000 and 2015 in all three census areas.

Table 2. Housing Trends in Counties Within the Study Area

	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Total Housing Units					
2000	9,732	14,279	2,866	15,934	2,389
2010	10,826	22,547	2,830	22,350	2,464
2016	10,683	22,427	2,775	21,786	2,403
Percent Change (2000–2016)	9.80%	57.10%	-3.20%	36.70%	0.60%
Occupied Units					
2000	91.60%	91.10%	76.70%	83.50%	82.10%
2010	89.30%	87.90%	79.20%	80.70%	81.90%
2016	88.80%	87.30%	74.40%	80.20%	83.90%
Vacancy Status: For Rent					
2000	34.40%	27.50%	35.00%	26.00%	48.50%
2010	37.40%	23.60%	21.90%	23.20%	31.60%
2016	(X)	(X)	(X)	(X)	(X)

Note: (X) = the estimate or data are not available.
Sources: U.S. Census Bureau (2000a, 2000b, 2000c, 2010a, 2010b, 2010c, 2016f)

2.2.1 Churchill County

According to the 2010 census, 10,826 housing units were available in Churchill County in 2010 (Table 2), and 3,979 of those units (or 36.8 percent) were in the City of Fallon (Table 3). The largest portion of the county's housing units in 2010 was comprised of single-family

detached units (67.9 percent). Mobile homes accounted for 16.0 percent of the remaining housing stock in the county (U.S. Census Bureau, 2010b).

The percent of occupied housing units (i.e., occupancy) decreased in the State of Nevada, Churchill County, and City of Fallon between 2000 and 2016, with a greater decrease occurring at the state level, where occupancy declined by 4.9 percent over the 16-year time span (U.S. Census, 2016i). Occupancy in Churchill County and the City of Fallon decreased by 2.8 percent and 0.8 percent, respectively, between 2000 and 2016. There are several reasons that housing units are classified as vacant, including homes being available for rent, for sale (and unoccupied), and used only on a seasonal or occasional basis (e.g., a vacation home). However, the largest percentage of vacancies in the State of Nevada, Churchill County, and City of Fallon are rental vacancies. The percentage of vacant housing available for rent increased in Churchill County and the City of Fallon from 2000 to 2010 while it decreased statewide over the same time period. Over 50 percent of vacant housing in the City of Fallon is for rent, which greatly exceeds State and County levels (Table 3).

At NAS Fallon, on-base housing is provided in one primary area on the west side of Pasture Road (U.S. Department of the Navy, 2014). According to the NAS Fallon Integrated Natural Resources Management Plan, on-base housing accommodations include about 240 family housing units, 532 unaccompanied officer units, and 1,931 unaccompanied enlisted units (U.S. Department of the Navy, 2014).

2.2.2. Lyon County

According to the 2010 census, 22,547 housing units were available in Lyon County in 2010 (Table 2) and 22,427 housing units in 2016; however, there was an overall increase in housing units between 2000 and 2016 of 57 percent. The percent of occupied housing units decreased in Lyon County by 3.8 percent over the 16-year time span (Table 2) between 2000 and 2016.

2.2.3 Mineral County

According to the 2010 census, 2,830 housing units were available in Mineral County in 2010 and 2,775 housing units in 2016 (Table 2). Since 2000, there has been a decrease of

3.2 percent in housing units. The percent of occupied housing units decreased in Mineral County by 2.3 percent over the 16-year time span (Table 2).

Table 3. Housing Trends in Nevada, the City of Fallon, and the Town of Gabbs

	Nevada	City of Fallon	Gabbs
Total Housing Units			
2000	827,457	3,336	183
2010	1,173,814	3,979	183
2016	1,200,517	3,986	(X)
Percent Change (2000–2016)	45.1%	19.5%	0.0%
Occupied Units			
2000	90.80%	90.00%	72.70%
2010	85.70%	88.30%	66.10%
2016	85.90%	89.20%	(X)
Vacancy Status: For Rent			
2000	41.50%	52.40%	22.00%
2010	37.00%	54.50%	21.00%
2016	(X)	(X)	(X)

Note: (X) = the estimate or data are not available.
Sources: U.S. Census Bureau (2000a, 2000b, 2000c, 2010a, 2010b, 2010c, 2016e)

2.2.4 Nye County

According to the 2010 census, 22,350 housing units were available in Nye County in 2010 and 21,786 units in 2016 (Table 2). Since 2000, there has been an increase of 36.7 percent of available housing units. The percent occupied housing units decreased in Nye County by 3.3 percent over the 16-year time period (Table 2).

2.2.5 Pershing County

According to the 2010 census, 2,464 housing units were available in Pershing County in 2010 and 2,403 housing units in 2016 (Table 2). However, since 2000, there has been an increase in 0.6 percent of available housing units. The percent of occupied housing units increased in Pershing County by 1.8 percent over the 16-year time span (Table 2) between 2000 and 2016.

3. REGIONAL ECONOMY

This section will cover study area employment and other local economic activity trends. County and selected community economic data will be analyzed.

3.1 Place of Residence Employment

The employment statuses for the State of Nevada, counties within the Study Area, and the City of Fallon and Town of Gabbs, as summarized by the U.S. Census Bureau's American Community Survey in 2016, are shown in Table 4 through Table 6. This section will analyze place of residence employment, which is where employees reside regardless of where they are employed.

Table 4. Resident Employment Status for Churchill and Lyon Counties, 2016

Category	Churchill County		Lyon County	
	Number	Percent (%)	Number	Percent (%)
Total population 16 years and over	19,102	100	41,531	100
In labor force	11,014	57.7	22,937	55.2
Civilian labor force	10,301	53.9	22,835	55
Employed	9,094	47.6	20,136	48.5
Unemployed	1,207	6.3	2,699	6.5
Armed forces	713	3.7	102	0.2
Not in labor force	8,088	42.3	18,594	44.8
Unemployment rate	(X)	11.7	(X)	11.8

Note: (X) signifies that the estimate is not applicable or data are not available
Source: U.S. Census Bureau (2016b, 2016g, 2016h)

Table 5. Resident Employment Status for Mineral, Nye, and Pershing Counties, 2016

Category	Mineral County		Nye County		Pershing County	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Total population 16 years and over	3,810	100	36,473	100	5,713	100
In labor force	2,125	55.8	16,808	46.1	2,198	38.5
Civilian labor force	2,125	55.8	16,808	46.1	2,198	38.5
Employed	1,849	48.5	14,446	39.6	2,120	37.1
Unemployed	276	7.2	2,362	6.5	78	1.4
Armed forces	0	0.0	0	0.0	0	0.0
Not in labor force	1,685	44.2	19,665	53.9	3,515	61.5
Unemployment rate	(X)	13.0	(X)	14.1	(X)	3.5

Note: (X) signifies that the estimate is not applicable or data are not available
Source: U.S. Census Bureau (2016b, 2016g, 2016h)

Table 6. Resident Employment Status the State of Nevada, the City of Fallon, and the Town of Gabbs, 2016

Category	Nevada		Fallon, NV		Gabbs, NV	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Total population 16 years and over	2,248,477	100	6,608	100	111	100
In labor force	1,443,621	64.2	4,037	61.1	32	28.8
Civilian labor force	1,435,687	63.9	3,771	57.1	32	28.8
Employed	1,302,162	57.9	3,296	49.9	0	0.0
Unemployed	133,525	5.9	475	7.2	0	0.0
Armed forces	7,934	0.4	266	4.0	0	0.0
Not in labor force	804,856	35.8	2,571	38.9	79	71.2
Unemployment rate	(X)	9.3	(X)	12.6	(X)	0.0

Note: (X) signifies that the estimate is not applicable or data are not available
Source: U.S. Census Bureau (2016b, 2016g, 2016h)

3.1.1 Churchill County

Nearly 60 percent of the population over the age of 16 were in the labor force in Churchill County (Table 4), which is slightly less than in the City of Fallon and below the State's rate of 64.2 percent (Table 6). The percentage of the labor force in the Armed Forces in Churchill County of 3.7 percent and the City of Fallon of 4.0 percent greatly exceeded the statewide level of 0.4 percent (U.S. Census Bureau, 2016a, 2016b, 2016c, 2016d). The unemployment rate in the State of Nevada was one of the highest in the nation at 9.3 percent in 2016 (Table 6), 1.9 percent higher than the national average of 8.3 percent (U.S. Census Bureau, 2016f). The average unemployment rates for the City of Fallon (12.6 percent) and Churchill County (11.7 percent) which were even higher and well above the state's unemployment rate.

In 2016, NAS Fallon directly employed 1,423 military and civilian personnel, 99 percent of whom lived in Churchill, Lyon, or Washoe counties (the region of influence considered in the Navy's economic impact study [U.S. Department of the Navy, 2014]). Total payroll spending for these personnel exceeded $84 million. An additional 3,163 jobs indirectly supported by NAS Fallon in 2015 included jobs related to base operations, payroll, and other spending (U.S. Department of the Navy, 2016).

3.1.2 Lyon County

In 2016, nearly 55.2 percent of the population over the age of 16 were in the labor force in the Lyon County (Table 4), which is below the State's rate of 64.2 percent. The percentage of

the labor force in the Armed Forces in Lyon County is well below the statewide level (U.S. Census Bureau, 2016a, 2016b, 2016c, 2016d) with 0.2 percent of the population in the Armed Services. The average unemployment rate for Lyon County (11.8 percent) was above the state's unemployment rate of 9.3 percent.

3.1.3 Mineral County

Nearly 55.8 percent of the population over the age of 16 were in the labor force in the Mineral County (Table 5), which is below the State's rate of 64.2 percent. The percentage of the labor force in the Armed Forces in Mineral County is below the statewide level (U.S. Census Bureau, 2016a, 2016b, 2016c, 2016d) with 0.0 percent of the population in the Armed Services. The average unemployment rate for Mineral County (13.0 percent) was above the state's unemployment rate of 9.3 percent.

3.1.4 Nye County

Nearly 46.1 percent of the population over the age of 16 were in the labor force in the Nye County (Table 5), which is below the State's rate of 64.2 percent. The percentage of the labor force in the Armed Forces in Nye County is well below the statewide level (U.S. Census Bureau, 2016a, 2016b, 2016c, 2016d) with 0.0 percent of the population in the Armed Services. The average unemployment rate for Nye County (14.1 percent) was above the state's unemployment rate of 9.3 percent.

3.1.5 Pershing County

Nearly 38.5 percent of the population over the age of 16 were in the labor force in the Pershing County (Table 5), which is below the State's rate of 64.2 percent. The percentage of the labor force in the Armed Forces in Pershing County is well below the statewide level (U.S. Census Bureau, 2016a, 2016b, 2016c, 2016d) with 0.0 percent of the population in the Armed Services. The average unemployment rate for Pershing County (3.5 percent) was below the state's unemployment of 9.3 percent.

3.2 Place of Sectoral Employment

Employment by place of work for the State of Nevada, Churchill County, Mineral County, Nye County, Pershing County, and Lyon County are shown on Table 7 (U.S. Department of Commerce, 2017). Table 7 shows full and part-time employment by economic

sector for the state and the five-county study area. Total employment for the state of Nevada has increased from 1,607,282 jobs in 2006 to 1,714,063 in 2016 (U.S. Department of Commerce, 2017). The largest employment sector for the state is the Accommodations and Food Service Sector, which includes casino hotels. Statewide, this sector makes up 19.02 percent of total state employment. The Construction Sector was impacted by the Great Recession with a decrease of 44.1 percent in employment from 2006 to 2016. Sectors with largest employment growth over the ten-year period are the Management of Companies and Enterprise Sector, the Mining, Oil and Gas Extraction Sector; the Educational Services sector; and the Health Care and Social Services Sector. Given the aging of the national population and Nevada being an area targeted for retirement, the growth of the Health Care and Social Assistance Sector is somewhat anticipated (Packham et al., 2013). For the state of Nevada, the Federal Military Sector accounts for 1.05 percent of the state's total employment (Table 7).

Table 7. Employment by Sector in Nevada, Churchill, Mineral, Nye, Pershing, and Lyon Counties, 2016

Table 7. Employment by Sector in Nevada, Churchill County, Mineral County, Nye County, Pershing County, and Lyon County, 2016												
Category	Nevada		Churchill		Mineral		Nye		Pershing		Lyon	
	Employed	% of Total	Employed	% of Total	Employed	% of Total	Employed	% of Total	Employed	% of Total	Employed	% of Total
Farm employment	5,664	0.33%	806	6.80%	87	4.07%	206	1.32%	232	9.82%	816	4.87%
Nonfarm employment	1,708,399	99.67%	11,051	93.20%	2,050	95.93%	15,405	98.68%	2,130	90.18%	15,948	95.13%
Private nonfarm employment	1,536,496	89.64%	8,514	71.81%	1,512	70.75%	13,512	86.55%	1,384	58.59%	13,643	81.38%
Forestry, fishing, and related activities	1,614	0.09%	(D)	.	(D)	.	95	0.61%	(D)	.	192	1.15%
Mining, quarrying, and oil and gas extraction	19,510	1.14%	137	1.16%	(D)	.	1,189	7.62%	570	24.13%	383	2.28%
Utilities	4,444	0.26%	95	0.80%	(D)	.	164	1.05%	0	0.00%	64	0.38%
Construction	92,220	5.38%	643	5.42%	(D)	.	786	5.03%	(D)	.	1,058	6.31%
Manufacturing	49,395	2.88%	528	4.45%	(D)	.	256	1.64%	(D)	.	2,297	13.70%
Wholesale trade	43,932	2.56%	225	1.90%	(D)	.	145	0.93%	(D)	.	325	1.94%
Retail trade	175,386	10.23%	1,267	10.69%	(D)	.	2,063	13.22%	204	8.64%	1,848	11.02%
Transportation and warehousing	76,256	4.45%	709	5.98%	(D)	.	271	1.74%	(D)	.	860	5.13%
Information	19,508	1.14%	103	0.87%	(D)	.	150	0.96%	(D)	.	84	0.50%
Finance and insurance	85,487	4.99%	333	2.81%	(D)	.	379	2.43%	34	1.44%	483	2.88%
Real estate and rental and leasing	102,536	5.98%	530	4.47%	(D)	.	771	4.94%	36	1.52%	800	4.77%
Professional, scientific, and technical service	96,007	5.60%	416	3.51%	28	1.31%	1,688	10.81%	54	2.29%	778	4.64%
Management of companies and enterprises	29,091	1.70%	(D)	.	(D)	.	41	0.26%	(D)	.	74	0.44%
Administrative and support and waste management and remediation services	123,207	7.19%	487	4.11%	(D)	.	981	6.28%	(D)	.	713	4.25%
Educational services	17,099	1.00%	73	0.62%	(L)	.	245	1.57%	(D)	.	(D)	.
Health care and social assistance	135,339	7.90%	1,005	8.48%	29	1.36%	899	5.76%	(D)	.	(D)	.
Arts, entertainment, and recreation	53,284	3.11%	482	4.07%	(D)	.	720	4.61%	(D)	.	919	5.48%
Accommodation and food services	325,961	19.02%	728	6.14%	(D)	.	1,648	10.56%	(D)	.	909	5.42%
Other services (except public administration)	86,220	5.03%	637	5.37%	66	3.09%	1,021	6.54%	81	3.43%	1,105	6.59%
Government and government enterprises	171,903	10.03%	2,537	21.40%	538	25.18%	1,893	12.13%	746	31.58%	2,305	13.75%
Federal, civilian	18,935	1.10%	601	5.07%	61	2.85%	124	0.79%	17	0.72%	73	0.44%
Military	17,920	1.05%	673	5.68%	13	0.61%	118	0.76%	13	0.55%	145	0.86%
State and local	135,048	7.88%	1,263	10.65%	464	21.71%	1,651	10.58%	716	30.31%	2,087	12.45%
State government	36,178	2.11%	131	1.10%	10	0.47%	196	1.26%	(D)	.	89	0.53%
Local government	98,870	5.77%	1,132	9.55%	454	21.24%	1,455	9.32%	(D)	.	1,998	11.92%

Source: U.S. Department of Commerce. "Table CA25N. Total Full-Time and Part-Time Employment by NAICS Industry". Bureau of Economic Analysis: Washington, D.C., 2017.

3.2.1 Churchill County

For Churchill County, the importance of NAS Fallon to the local economy is seen from Table 7. For Churchill County, 5.68 percent of the county's total employment is with the Federal Military Sector, which is approximately 5.5 times greater than the share at the state level (U.S. Department of Commerce, 2017). Also, Churchill County's Agricultural Sector accounts for 6.8 percent of total county employment while statewide the Agricultural Sector's share of total state employment is only 0.33 percent.

3.2.2 Mineral County

For Mineral County, total employment from 2006 to 2016 decreased from 2,321 to 2,137 (U.S. Department of Commerce, 2017). The Federal Military Sector makes up only 0.61 percent of total county employment in 2016. The Local Government Sector has the highest proportionate share of total county employment with 21.2 percent of total county employment.

3.2.3 Nye County

For Nye County, the number of jobs from 2006 to 2016 decreased from 17,696 to 15,611 (U.S. Department of Commerce, 2017). The Federal Military Sector only makes up 0.76 percent of total Nye County population. Nye County employment is highly skewed toward Southern Nye County or the community of Pahrump. Pahrump from the American Community Survey Five-Year Average for 2016 had 83.1 percent of total Nye County American Community Survey Five-Year Average 2016 population (U.S. Census, 2016g). Because of the size and influence of the Pahrump Area economy on Nye County, the Pahrump Area was not included in the Nye County analysis. For the FRTC Modernization analysis, three northern Nye County zip codes will be included in the analysis.

3.2.4 Pershing County

The number of jobs in Pershing County have decreased slightly from 2,380 in 2006 to 2,363 in 2016 (U.S. Department of Commerce, 2017). The Agricultural Sector makes up approximately 9.82 percent of the county's total employment. The Mining Sector is an important player in the county making up 24.13 percent of total County 2016 employment. The Federal Military Sector only makes up 0.55 percent of Pershing County's total employment (U.S. Department of Commerce, 2017).

3.2.5 Lyon County

Lyon County was greatly impacted by the Great Recession. With employment in 2006 being 18,157 dropping to 16,088 in 2010 and finally increasing to 16,764 in 2016 (U.S. Department of Commerce, 2017) Lyon County has a large proportionate share of its total employment in manufacturing employment with 13.7 percent of total county 2016 employment in the Manufacturing Sector. For the state of Nevada, the Manufacturing Sector's proportionate share is only 2.9 percent. The Federal Military Sector only accounts for 0.86 percent of total county employment in 2016 (U.S. Department of Commerce, 2017).

3.3 Employee Compensation

Table 8 shows total employee compensation for the state of Nevada and the five counties in 2016. Employee compensation for the state of Nevada increased in nominal terms to $79.7 billion, which is a 10-year increase nominally of $13.9 billion dollars or 20.4 percent nominal increase. Also, from Table 8, average employee compensation for the state of Nevada was $46,512 with the highest per employee compensation in the Utilities Sector at $132,520 followed by the Management of Companies and Enterprises Sector at $122,850. For the state, the Federal Military Sector in 2016 had total employee compensation of $1,222,390,000, which is $68,214 per job.

3.3.1 Churchill County

For Churchill County, total employee compensation in 2016 was $521,410,000, which was 0.65 percent of the state 2016 total. Per job employee compensation for Churchill County in 2016 was $43,975, which was 94.5 percent of the state average. The Utilities Sector for Churchill County had the highest per job compensation of $123,274 followed by the Federal Military Sector. Given the NAS Fallon presence, it is not surprising that this sector is prominent in county income. These incomes are also spent in the study area and these expenditures impact the overall activity in the study area economy.

3.3.2 Lyon County

For Lyon County, total employee compensation for 2016 was $609,902,000, which was 0.77 percent of the state total. As for per job compensation, Lyon County in 2016 had per job compensation of $36,382 which was 21.8 percent below the state average. The largest private

sector employee compensation in 2016 was the Manufacturing Sector with employee compensation of $139,332,000 or 22.8 percent of the county total. Also, the Utilities Sector had the highest compensation per job in the county at $105,641. The Federal Government Military Sector in 2016 had $4,433,000 in total employee compensation or $30,572 in per job compensation.

3.3.3 Mineral County

For Mineral County, total employee compensation in 2016 was $101,958,000 which was 0.1 percent of the state 2016 total. Per job compensation in 2016 for Mineral County was $47,711 per job which was 2.5 percent greater than the state average. Of total county employee compensation, the Local Government Sector made up 28.5 percent of total county employee compensation. The Federal Government, Civilian Sector had the highest compensation per job at $104,934.

3.3.4 Nye County

For Nye County, employment compensation in 2016 was $721,765,000, which was 0.91 percent of total state compensation. Compensation per job for Nye County was $46,234, which was 0.5 percent lower than the statewide average. Professional, Scientific, and Technical Services Sector had total employment compensation of $141,387,000 in 2016 or 19.5 percent of county total. The Utilities Sector recorded the higher per job employee compensation at $134,701. The Federal Military Sector had total employee compensation of $3,849,000 in 2016 with a per job employee compensation of $32,619.

3.3.5 Pershing County

For Pershing County, total employee compensation for 2016 was $137,295,000, which was 0.17 percent of the state total. As for per job compensation, Pershing county 2016 per job compensation was $58,127 which was 25 percent above the state average. The Mining Sector had total employee compensation in 2016 of $55,051,000, which was 40.0 percent of total county employee compensation. The Mining Sector also had the highest employee compensation in 2016 for Pershing County at $96,581. The Federal Government Military Sector in Pershing County in 2016 had only $408,000 in total compensation with a per job employee compensation of $31,385.

Table 8. Total Compensation by Sector in Nevada, Churchill, Mineral, Nye, Pershing, and Lyon Counties, 2016

Table 8. Total Compensation by Sector in Nevada, Churchill County, Mineral County, Nye County, Pershing County, and Lyon County, 2016												
Category	Nevada		Churchill		Mineral		Nye		Pershing		Lyon	
	Total ($1,000)	Per Job ($)	Total ($1,000)	Per Job ($)	Total ($1,000)	Per Job ($)	Total ($1,000)	Per Job ($)	Total ($1,000)	Per Job ($)	Total ($1,000)	Per Job ($)
Total Earnings	$79,724,614	$46,512	$521,410	$43,975	$101,958	$47,711	$721,765	$46,234	$137,295	$58,127	$609,902	$36,382
Farm	$100,060	$17,666	$12,757	$15,828	$337	$3,874	$2,832	$13,748	$8,054	$34,716	$19,802	$24,267
Nonfarm	$79,624,554	$46,608	$508,653	$46,028	$101,621	$49,571	$718,933	$46,669	$129,241	$60,677	$590,100	$37,002
Private	$64,906,031	$42,243	$310,000	$36,411	$64,737	$42,815	$584,848	$43,284	$72,775	$52,583	$437,203	$32,046
Forestry, fishing, and related activities	$30,033	$18,608	(D)	.	(D)	.	$2,291	$24,116	(D)	.	$4,462	$23,240
Mining, oil and gasextraction	$1,535,415	$78,699	$2,245	$16,387	(D)	.	$116,149	$97,686	$55,051	$96,581	$19,965	$52,128
Utilities	$588,921	$132,520	$11,711	$123,274	(D)	.	$22,091	$134,701	$0	#DIV/0!	$6,761	$105,641
Construction	$5,157,280	$55,924	$31,581	$49,115	(D)	.	$28,017	$35,645	(D)	.	$42,506	$40,176
Manufacturing	$3,037,142	$61,487	$37,183	$70,422	(D)	.	$10,651	$41,605	(D)	.	$139,332	$60,658
Wholesale trade	$2,871,371	$65,359	$6,781	$30,138	(D)	.	$5,226	$36,041	(D)	.	$13,449	$41,382
Retail trade	$5,234,202	$29,844	$32,402	$25,574	(D)	.	$49,566	$24,026	$4,462	$21,873	$41,697	$22,563
Transportation and warehousing	$3,743,254	$49,088	$53,763	$75,829	(D)	.	$7,016	$25,889	(D)	.	$30,993	$36,038
Information	$1,120,089	$57,417	$4,157	$40,359	(D)	.	$6,269	$41,793	(D)	.	$2,741	$32,631
Finance and insurance	$3,107,479	$36,350	$7,485	$22,477	(D)	.	$5,933	$15,654	$789	$23,206	$7,322	$15,159
Real estate and rentaland leasing	$1,476,609	$14,401	$2,896	$5,464	(D)	.	$4,411	$5,721	$218	$6,056	$5,060	$6,325
Professional, scientific,and technical services	$4,706,255	$49,020	$14,457	$34,752	$842	$30,071	$141,387	$83,760	$550	$10,185	$22,075	$28,374
Management ofcompanies andenterprises	$3,573,831	$122,850	(D)	.	(D)	.	$1,439	$35,098	(D)	.	$4,839	$65,392
Administrative and support and waste management and remediation services	$3,707,737	$30,094	$18,886	$38,780	(D)	.	$55,040	$56,106	(D)	.	$14,943	$20,958
Educational services	$522,722	$30,570	$2,434	$33,342	$0	.	$7,708	$31,461	(D)	.	(D)	.
Health care and socialassistance	$7,404,744	$54,713	$48,602	$48,360	$783	$27,000	$44,416	$49,406	(D)	.	(D)	.
Arts, entertainment,and recreation	$1,762,966	$33,086	$10,737	$22,276	(D)	.	$18,615	$25,854	(D)	.	$23,184	$25,227
Accommodation and food servicesfood services	$13,388,599	$41,074	$13,097	$17,990	(D)	.	$39,346	$23,875	(D)	.	$15,479	$17,029
Other services (exceptpublic administration)	$1,937,382	$22,470	$9,958	$15,633	$932	$14,121	$19,277	$18,881	$1,887	$23,296	$19,600	$17,738
Government	$14,718,523	$85,621	$198,653	$78,302	$36,884	$68,558	$134,085	$70,832	$56,466	$75,692	$152,897	$66,333
Federal, civilian	$1,875,344	$99,041	$41,614	$69,241	$6,401	$104,934	$11,481	$92,589	$1,168	$68,706	$5,696	$78,027
Military	$1,222,390	$68,214	$67,491	$100,284	$615	$47,308	$3,849	$32,619	$408	$31,385	$4,433	$30,572
State and local	$11,620,789	$86,049	$89,548	$70,901	$29,868	$64,371	$118,755	$71,929	$54,890	$76,662	$142,768	$68,408
State government	$3,051,153	$84,337	$10,489	$80,069	$846	$84,600	$15,160	$77,347	(D)	.	$8,101	$91,022
Local government	$8,569,636	$86,676	$79,059	$69,840	$29,022	$63,925	$103,595	$71,199	(D)	.	$134,667	$67,401
Source: U.S. Department of Commerce. "table CA6N. Compensation of Employees by Naics Industry". Bureau of Economic Analysis: Washington, D.C., 2017.												

3.4 Payment in Lieu of Taxes

Table 9 shows the overall ownership of land in the state of Nevada and the Nevada counties of Churchill, Mineral, Nye, and Lyon. Because county and city governments cannot tax federal properties, PILT was created by the federal government. PILT are federal payments to local governments that help offset losses in property taxes due to non-taxable federal lands within their boundaries (U.S. Department of the Interior, 2017a). The law recognizes that the inability of local governments to collect property taxes on federally owned land can create a fiscal impact. The payments are made annually for tax-exempt federal lands administered by the BLM, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the U.S. Forest Service (part of the U.S. Department of Agriculture), and for federal water projects and some military installations. NAS Fallon is not a PILT installation. The formula used to compute the payments is contained in the PILT Act and is based on population, receipt-sharing payments, and the amount of federal land within an affected county.

A detailed analysis of PILT and its calculations are presented in a referenced study by Zimmerman and Harris (2000) and in Appendix A. In Fiscal Year 2016, Nevada received over $25 million in payments in lieu of taxes from the BLM (U.S. Department of the Interior, 2017b). The payments are distributed by the state to counties with entitled acreage.

The number of entitlement acres and the amount of payment in 2018 for Churchill, Lyon, Mineral, Nye, and Pershing counties are presented in Table 10. It should be noted that the maximum payment made to each county is limited based on the population in the county. The payment is prorated depending on the appropriated funding for the year. The Unit Population is used to determine the population funding limit.

Table 9. Land Ownership in Nevada, Churchill, Mineral, Nye, Pershing, and Lyon Counties, 2016

Ownership	Nevada	Churchill County	Mineral County	Nye County	Pershing County	Lyon County
Total Area	70,768,955	3,215,467	2,440,305	11,647,102	3,883,169	1,295,518
Private Lands	9,526,819	719,044	99,431	305,372	943,254	365,691
Conservation Easement	22,841	12,628	0	162	0	0
Federal Lands	59,802,893	2,436,211	2,101,913	11,322,361	2,926,483	849,971
Forest Service	5,838,290	0	378,297	1,963,953	0	275,715
BLM	47,256,488	1,997,274	1,579,790	6,555,685	2,910,692	572,547
National Park Service	769,234	0	0	107,350	0	0
Military	2,487,638	227,773	143,826	1,801,244	0	0
Other Federal	3,451,243	211,164	0	894,129	15,791	1,709
State Lands	171,474	7,876	299	10,970	7,429	28,932
State Trust Lands	1,881	183	0	10	0	0
Other State	169,593	7,693	299	10,960	7,429	28,932
Tribal Lands	1,248,638	52,336	238,662	8,399	6,003	50,924
City, County, Other	19,131	0	0	0	0	0

Source: U.S. Geological Survey, Gap Analysis Program, 2016. Protected Areas Data Base of the United States (PADUS). Version 1.4.

Table 10. Payment in Lieu of Taxes to Churchill, Mineral, Nye, Pershing, and Lyon Counties

County	Federal Acres	Unit Population	2018 Payment to County ($)	Payment Methodology
Churchill	2,158,245	24,000	2,298,812	Population limited Formula A
Mineral	1,936,566	5,000	781,024	Population limited Formula A
Nye	8,548,402	43,000	3,326,751	Population limited Formula A
Pershing	2,918,844	7,000	1,112,319	Population limited Formula A
Lyon	859,206	50,000	2,313,628	Population limited Formula A

3.5 Major Economic Sectors

3.5.1 Agricultural

Agriculture is one of Nevada's most important industries, contributing significantly to the economies of rural communities and the state as a whole. Nevada's farms combined covered nearly 6 million acres of land in 2012 (Table 11). Approximately 44 percent of Nevada's farms were in cattle and calves production in 2012 (U.S. Department of Agriculture, 2014). In 2016, Nevada's ranches rank third in the nation in size, averaging 3,500 acres (Nevada Department of Agriculture, 2017).

The five-county study area (Churchill, Lyon, Mineral, Nye and Pershing counties) are important counties within Nevada's agricultural sector. Historically, Churchill and Lyon counties participated in the first U.S. Bureau of Reclamation project in 1902, the Newlands Irrigation Project. The Newlands Irrigation Project provides water for farming in Churchill and Lyon counties. Water from the Truckee River is diverted into the Truckee Canal at Derby Dam, and water from the Truckee Canal and Carson River flow into Lahontan Reservoir. The water from the Newlands Project, which is now operated by the Truckee-Carson Irrigation District, is used to irrigate more than 60,000 acres (Truckee-Carson Irrigation District, 2010).

Table 11. Overall Agricultural Statistics for Study Area

Category	Nevada	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Total Farms	4,137	672	462	119	198	154
Land in farms (acres)	5,913,761	197,232	366,006	(D)	65,116	299,290
Average farm size (acres)	1429	294	792	(D)	329	1,943
Total Cropland (acres)	756,852	443	78,269	(D)	26,354	57,379
Harvested cropland (acres)	582,494	49,554	66,913	(D)	15,329	50,470
Irrigated land (acres)	687,790	53,617	87,673	(D)	20,017	52,785
Market Value of Agricultural Products Sold:						
Total Sales (thousands)	764,144	89,936	133,037	2,943	70,495	62,751
Average per farm ($)	184,710	133,833	287,959	24,731	356,035	407,474
Estimated market value of land and buildings						
Average per farm ($)	1,324,673	713,604	1,738,119	863,599	703,429	1,813,416
Average per acre ($)	927	2,427	2,194	429	2,139	933
Estimated market value of all machinery and equipment ($)	556,947,000	74,319,000	63,585,000	4,627,000	25,189,000	40,458,000

(D) = Disclosure. The U.S. Department of Agriculture will not print data if it is possible a single producer or small number of producers can be identified.
Source: U.S. Department of Agriculture, 2014

Now, as shown in Table 12, Churchill and Lyon counties jointly produce approximately 22.8 percent of the state's alfalfa. In addition, the Dairy Farmers of America dry milk plant is located in Fallon, Nevada. This 89,822 square foot plant employs 45 people and produces 250,000 pounds of dry milk a day that is shipped to consumers around the world (Roberts, 2015). An economic cluster is being created around the dry milk plant with more dairy cattle in production and additional demands on alfalfa hay (Churchill County Commissioners, 2015). Lyon County is one of the largest counties in the state in agriculture. The agricultural sector of Lyon is quite diverse, growing garlic and onions along with beef cattle and alfalfa hay (Tables 12 and 13). Pershing County is also one of the state's top agricultural counties, obtaining surface water from Rye Patch Reservoir. From past droughts, the irrigation water available for Pershing County agriculture has been quite variable (DeLong, 2015).

Table 12. Alfalfa Hay Statistics for Study Area Counties

	2002			2007			2012		
Location	**Farms**	**Acres**	**Alfalfa Hay Production (Dry Tons)**	**Farms**	**Acres**	**Alfalfa Hay Production (Dry Tons)**	**Farms**	**Acres**	**Alfalfa Hay Production (Dry Tons)**
Nevada	1,379	502,724	1,534,490	1,417	470,068	1,558,120	1,766	524,992	1,796,932
Churchill	323	33,491	153,938	322	28,862	130,719	358	40,802	166,665
Lyon	167	40,504	176,841	154	49,200	235,673	188	60,510	242,686
Mineral	6	8,219	31,009	4	(D)	(D)	82	2,350	(D)
Nye	59	17,105	(D)	45	11,607	(D)	55	13,981	73,207
Pershing	69	26,465	(D)	76	36,851	(D)	88	42,382	171,649

(D) = Disclosure. The U.S. Department of Agriculture will not print data if it is possible a single producer or small number of producers can be identified.
Source: U.S. Department of Agriculture, 2004, 2009, 2014

Table 13. Cattle and Calves Inventory for Study Area Counties

	2002		2007		2012	
Location	**Farms**	**Cattle and Calves**	**Farms**	**Cattle and Calves**	**Farms**	**Cattle and Calves**
Nevada	1,583	460,263	1,513	441,629	1,822	420,322
Churchill	269	47,136	244	36,834	297	38,814
Lyon	172	36,273	126	36,579	166	46,039
Mineral	11	1,422	30	2,816	65	2,221
Nye	79	27,657	80	29,422	88	28,672
Pershing	76	19,161	81	23,264	75	26,525

Source: U.S. Department of Agriculture, 2004, 2009, and 2014

Grazing lands, many of which are lands owned by the federal government and managed by the BLM, are integral to cattle and other livestock operations, and play a role in determining the size of a herd and the market value of the livestock operation. The metric of an "animal unit" was devised as a standard unit for calculating the relative grazing requirements of different types of livestock. For cattle, an animal unit is defined as one mature cow and her suckling calf weighing a combined 1,000 pounds (or a 1,000-pound steer) requiring 26 pounds of dry matter forage per day. The concept of the "AUM" is used by range and pasture managers to estimate the monthly stocking requirements for pastures to support livestock (Pratt and Rasmussen, 2001).

3.5.2 Mining

Nevada mines produce over a dozen types of mineral commodities as well as aggregates and oil. In 2015, the total value of all commodities mined in the State was over $7.4 billion, with approximately 86.1 percent from gold and silver production (Perry & Visher, 2016). Nevada

produces about 83 percent of the gold mined in the United States. The 2015 production of minerals sold as commodities from the 12 nearby mines was valued at over $215.5 million (Table 14). The four diatomite mines produce nearly 100 percent of the State's total diatomite production, which was valued at $42.8 million in 2015. The Huck Salt mine, which is located near Fallon, is the State's only major salt mine, producing 100 percent of salt sold as a commodity in 2015 and was valued at $0.5 million. The most lucrative mine, the Coeur Rochester mine, is located near Lovelock in Pershing County, and is north of the Study Area. Silver production in 2015 accounted for nearly half of the state's total production and was valued at over $72.8 million. There are 12 industrial active mineral mines located in Churchill County and adjacent areas in surrounding counties, but none of these mines are in the proposed expansion area (Perry and Visher, 2016; Nevada Division of Minerals 2017).

3.5.3 Geothermal

Nevada is the second-largest producer of geothermal energy in the United States and has more geothermal projects in development than any other state (U.S. Department of Energy, 2017). Nevada is ranked first in the nation in terms of geothermal use per capita, with roughly 65 percent of renewable energy generation produced by domestic geothermal resources in northern Nevada. As shown in Table 15, there are nine geothermal power plants located in Churchill County and adjacent areas in surrounding counties, but none are located within the proposed expansion areas (Perry and Visher, 2016; Nevada Bureau of Mines and Geology, 2017). Ten geothermal projects in various stages of development are located in Churchill County, where the majority of the state's known geothermal resources areas are located (Bureau of Land Management, 2017b). There is one active geothermal field and one active geothermal lease parcel located within the proposed expansion area but the majority of existing geothermal sales parcels are located outside of the proposed expansion areas. Additionally, power transmission lines, used to distribute power from geothermal power plants to the surrounding region, traverse the Study Area. Two transmission lines currently pass through the existing DVTA area that is open to the public and both lines would pass through the proposed DVTA expansion area.

Table 14. Major Mineral Mines near the FRTC and the Proposed Expansion, 2015

Facility	County	Commodity	2015 Production (short tons)	Percent of Nevada Production	Approximate Value ($ million)
Churchill Mine	Churchill	Limestone	519,125.00	6.60%	$2.50
Fernley Operations	Churchill	Diatomite	31,817.00	14.00%	$6.00
Hazen mine	Churchill	Diatomite	9,283.00	4.10%	$1.80
Huck Salt	Churchill	Salt	11,649.00	100.00%	$0.50
Nightingale Mine	Churchill	Diatomite	27,800.00	12.20%	$5.30
Perlite Mine	Churchill	Perlite	23,730.00	91.60%	$2.50
Coeur Rochester Mine	Pershing	Gold	1.6	1.00%	$59.40
Coeur Rochester Mine	Pershing	Silver	145	48.90%	$72.80
Colorado Mine	Pershing	Diatomite	156,565.00	68.90%	$29.70
Relief Canyon Mine	Pershing	Limestone	28,865.00	0.40%	$0.10
Nassau Mine	Pershing	Bentonite	0	0.00%	$0.00
Premier Magnesia Mine	Nye	Magnesium Compounds	108,943.00	100.00%	$6.70
Denton-Rawhide Mine	Mineral	Gold	1	0.40%	$26.00
Denton-Rawhide Mine	Mineral	Silver	5	1.50%	$2.30
TOTAL VALUE					**$215.60**

Source: Perry and Visher (2016), Perry and Visher (2017)

Table 15. Geothermal Power Plants in Study Area, 2015

Facility	County	Mineral Type	Company	Energy Output (Sales) (MWh)
Salt Wells	Churchill	Limestone	Enel North America, LLC	103,410
Stillwater 1 and 2	Churchill	Diatomite	Enel North America, LLC	135,369
Soda Lake 1 and 2	Churchill	Diatomite	Cyrq Energy	70,002
Patua	Churchill	Salt	Cyrq Energy	115,973
Desert Peak 2	Churchill	Diatomite	Ormat Nevada Inc.	84,404
Brady	Churchill	Perlite	Ormat Nevada Inc.	53,597
Dixie Valley	Churchill	Gold	Terra-Gen Dixie Valley, LLC	479,103
Wild Rose 1 and 2	Mineral	Silver	Ormat Nevada Inc.	351,124
Wabuska 1 and 2	Lyon	Diatomite	Homestretch Geothermal, LLC	9,125
TOTAL VALUE				**1,402,107**

Notes: The Stillwater plant is a hybrid plant utilizing both geothermal and solar energy.
MWh = megawatt hours
Source: Nevada Division of Minerals (2017)

3.5.4 Recreation and Tourism

Recreational activities in the FRTC Area include outdoor activities such as fishing, hiking, camping, bird watching, rock/fossil collecting, OHV use, horseback riding, hunting, sightseeing, and visiting historic sites. Public comments indicated that recreational impacts should focus on hunting and off-highway vehicle use (e.g., four wheelers and motorcycles).

Businesses and organizations that provide opportunities for recreational activities in the region include Pine Nut Mountains Trail Association, Nevada Four Wheel Drive Association, California Four Wheel Drive Association, American Motorcyclist Association District 36, Rebelle Rally Enterprises, Sierra Trail Dogs Motorcycle Club, Hills Angels 4x4 Club, and the Sharetrails.org BlueRibbon Coalition, among others. Local retail stores, the food services sector (e.g., restaurants), and accommodations (e.g., motels) benefit economically from organized recreational activities that attract visitors from across and outside of the state.

There are many popular off-road vehicle races in the study areas, including the Las Vegas to Reno, Fallon Night Vision 250, and the High Desert Classic Endurance Ride. The Best in the Desert Racing Association holds the annual off-road vehicle race from Las Vegas to Reno that

would traverse lands in Mineral County that are within the proposed expansion area of B-17. The race is billed as "the longest off-road race in the United States" and, while the race only lasts for one day, preparation for the race, including marking the route, begins up to one year before the race takes place. From the Nevada Division of Tourism visitor survey, it was estimated that total event spending is between $714,000 and $2,142,000 (U.S. Department of Interior, 2016).

Hunting and wildlife viewing are popular recreational activities enjoyed by visitors and residents. Some of the lands used for these activities are part of the proposed expansion areas and would become closed to the public. Various organizations, primarily sportsmen's organizations, are interested in preserving these activities, and have invested in the construction of approximately 65 guzzlers within the study area. Guzzlers provide water needed by wildlife during dry conditions. Ten big game (e.g., bighorn sheep, pronghorn, and mule deer) guzzlers and 23 small game guzzlers are in the proposed expansion areas.

4. METHODOLOGY

Estimation of the economic, employment, and household income impacts of changes in study area economic activity from the FRTC Modernization will be derived from employing input-output or inter-industry modeling techniques. Interindustry analysis was developed by Wassily Leontief in the late 1930s to represent the interdependencies between different economic sectors in a study area (1936). Interindustry analysis shows how economic sector are linked together by sales and purchases between other economic sectors. Since its inception, the framework of interindustry models has continued to be improved and is one of today's most applied analytical techniques in economics (Baumol, 2000). The advantage of interindustry analysis is its ability to provide an easy to understand, transparent, and detailed picture of economic structure of a study area economy at a point in time. Another advantage is that interindustry models do not incorporate any behavioral equations of individuals or businesses, so it is politically and ideologically neutral (Foran et al., 2005). This section will discuss some basics of study area economics, discussion of interindustry input-output models, and explain the verification and validation of interindustry models.

4.1 Basic Concepts of Study Area Economics

Figure 2 illustrates the major dollar flows of goods and services in any economy. The foundation of a study area's economy is those basic economic sectors that sell some or all their goods and services to buyers outside of the study area. The flow of products out of, and dollars into, a study area is represented by the two arrows in the upper right portion of Figure 2. To produce these goods and services for "export" outside the study area, the basic economic sectors purchase inputs from outside of the study area (upper left portion of Figure 2), labor from the residents or "households" of the study area (left side of Figure 2), and inputs from service industries located within the study area (right side of Figure 2). The flow of labor, goods, and services in the study area is completed by households using their earnings to purchased goods and services from the study area's service economic sectors (bottom of Figure 2). It is evident from the interrelationships illustrated in Figure 2 that a change in any one segment of a study area's economy will have reverberations throughout the entire study area economy.

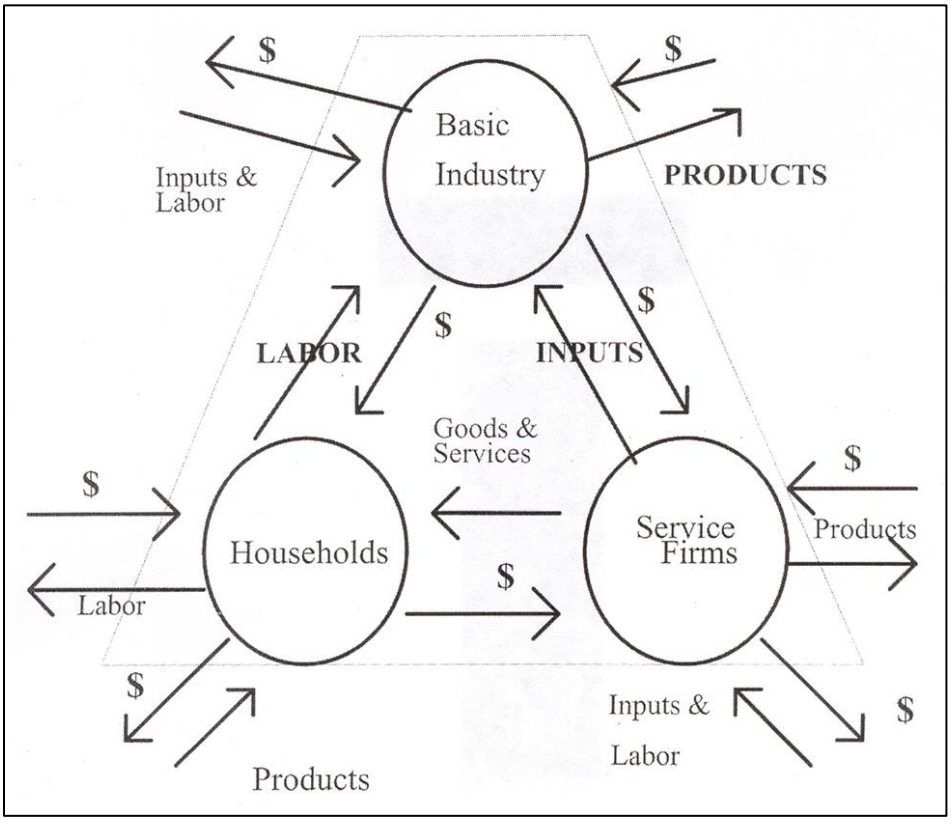

Figure 2. Overview of Community Economic System

Likewise, the proposed activities associated with the Fallon Range Training Complex Modernization would have impacts on the study area economy. Lands that are currently utilized for grazing would be withdrawn or acquired by the Navy so that grazing would no longer be allowed except in the DVTA area. The study area's Range Livestock Sector is designated as a basic economic sector as it draws dollars from outside the study area. Revenue from this basic economic sector employs people from the study area household sector to work on these range cattle operations. However, most of the study area economic linkages are from the Range Livestock Sector's purchases of goods and services from the study area service sectors. These include economic sectors such as restaurants, gas stations, hotels and other retail sectors. As earnings increase in these economic sectors, they will hire additional people and buy more inputs from other study area sectors. Thus, the change in the economic base works its way throughout the entire study area economy.

The total impact of a change in the study area economy consists of direct, indirect, and induced impacts. Direct impacts are the changes in the activities of the impacted industry, such as the reduction of operations by the Range Livestock Sector. The impacted economic sector, such as the Range Livestock Sector, changes its purchases of inputs as a result of the direct impacts. This produces an indirect impact in other study area economic sectors. Both the direct and indirect impacts change the flow of dollars to the study area's households. The study area households alter their consumption accordingly. The effect of this change in study area household consumption upon economic sectors in the study area is referred to as induced impacts. The multiplier effect is a measure that yields the effects created by an increase or decrease in economic activity.

4.2 Overview of Interindustry Analysis

4.2.1 Input-Output Models

Within a study area economy, there are numerous economic sectors performing different tasks. All sectors are dependent upon each other to some degree. A change in economic activity by one sector will impact either directly or indirectly the activity and viability of other sectors in the economy. In order to show these interdependencies and interventions between economic sectors, a study area input–output model can be used.

Wassily Leontief (1936) developed input-output or interindustry analysis and Miller and Blair (2009) present a detailed mathematical presentation of interindustry analysis in a referenced study. Input-output models create a picture of a study area economy describing monetary flows to and from economic sectors and institutions (local, state, and federal government, etc.). These monetary flows are called interrelationships. Input-output models show these interrelationships, the purchases (inputs) and sales (outputs) from one economic sector to another, both inside and outside the study area.

Multipliers are a product of input-output analysis showing total changes throughout the study area economy from a one-unit change for a given economic sector. Multipliers can be output, employment, and labor income (employee compensation and proprietor income). Output multipliers measure the total change in study area economic activity from a change in output by a given study area economic sector. Employment multipliers measure the total change in study area employment from a change in a given study area economic sector activity. Labor income impacts are the total labor income impacts in the study area from a change in economic activity in a given study area economic sector.

Impacts can be further delineated into direct, indirect, and induced impacts. Direct impacts represent the initial changes by a selected study area economic sector. Indirect impacts are the study area businesses buying and selling among each other. Induced impacts include household spending resulting from direct and indirect impacts. This change in household expenditures includes grocery budget, automobile sales, restaurant expenditures, etc.

4.2.2 Verification and Validation of Input-Output Models

Input-output models are useful in determining total and sectoral impacts from changes in the national economy and its economic linkages have been used for economic clustering studies. States and localities wanting similarly detailed economic impact analysis for their jurisdictions initially used the national input-output model for impact and linkage analysis, but the national economy can be very dissimilar at the state or regional economy level.

One of the most used secondary input-output models is Impact Analysis for Planning (IMPLAN). Originally developed by the U S Forest Service, IMPLAN is now a private modeling company (IMPLAN, 2014). The two major components of IMPLAN is its data files and software. The desktop database includes information on 528 different economic sectors, along

with a national input-output model to derive regional or county level input-output models. The IMPLAN model is reasonably flexible, allowing users to verify and validate data used in county model development.

However, there must be the verification and validation of data set used for developing IMPLAN models as outlined by Holland et al. (1997). The first step is to download the IMPLAN model data from the Industry Detail file, which has sectoral employment. The second step was to download Quarterly Census of Employment and Wage data for the study area from the State of Nevada Department of Employment, Training, and Rehabilitation (DETR) employment data by North American Industrial Classification Sector (NAICS). Using IMPLAN user supplied crosswalk tables, the NAICS sectors and employment levels are redefined into IMPLAN economic sectors.

After creating the IMPLAN economic sectors, employment data for the same year as the IMPLAN data and model is downloaded from Bureau of Economic Analysis Regional Economic Information System (BEA REIS). The BEA REIS employment data will have employee and proprietor data. The data will show employment by two-digit NAICS code that can be cross-referenced with and redefined into the IMPLAN economic sectors defined above. Therefore, using data from the state employment offices, proportional values of each sector to each two-digit IMPLAN sector can be estimated. Holland et al. (1997) suggests reclassifying certain sectors in a way that intuitively makes more sense to the public. By using procedures outlined by Holland, et al. (1997) and DETR and BEA REIS data, county level input-output models for this analysis are verified and validated.

5. RESULTS

5.1 Sectoral Value of Output

From the validated and verified county models of Churchill, Mineral, Pershing, Lyon, Lander, and Eureka Counties, and the sub-county model of Nye County, economic sector value of output is shown in Appendix B. Sectoral value of output is defined as the monetary value of goods and services produced by a given economic sector in a study area. Examination of study area sectoral value of production and value of output changes will provide information to evaluate significance of changes in study area economies from FRTC Modernization.

5.1.1 Churchill County

For Churchill County, there are 142 economic sectors with total value of output of $1,762.6 million. The top three economic sectors in Churchill County by sectoral value of output are the Dry, Condensed, and Evaporated Dairy Products Sector ($122.9 million), the Employment and Payroll of Federal Government, Military Sector ($121.7 million), and the Secondary Processing of other Nonferrous Metal Sector ($109.4 million). These three sectors make up 20.1 percent of total Churchill County value of output.

5.1.2 Lyon County

For Lyon County, there are 211 active economic sectors with total county value of output of $2,793.6 million. The top three economic sectors in Lyon County by sectoral value of output are the Owner-Occupied Dwelling Sector ($185.1 million), the Jewelry and Silverware Manufacturing Sector ($89.8 million), and the Gambling Industries, Except Casino Hotel Sector ($88.3 million). These three sectors make up 12.97 percent of total Lyon County total value of output.

5.1.3 Mineral County

For Mineral County, there are 58 active economic sectors with total county value of output of $281.2 million. The top three economic sectors in Mineral County by sectoral value of output are the Gold Ore Mining Sector ($56.8 million), the Facilities Support Services Sector ($43.8 million), and the Hospital Sector ($30.5 million). These three sectors make up 46.6 percent of total Mineral County total value of output.

5.1.4 Nye County

For this study, there are the three Northern Nye County zip codes of 89310, 89049, and 89045 that are affected. There are 153 economic sectors with a total value of output of $3,002.1 million for the Nye County sub-county study area. The top three economic sectors in the sub-county Nye County study area are the Gold Ore Mining Sector ($742.5 million), the Scientific Research and Development Services Sector ($445.2 million), and the Petroleum Refiners Sector ($212.4 million). These three sectors make up 46.6 percent of total sub-county Nye County study area total value of output.

5.1.5 Pershing County

For Pershing County, there are 63 active economic sectors with total county value of output of $434.2 million. The top three economic sectors in Pershing County by sectoral value of output are the Soybean and Other Oilseed Processing Sector ($125.2 million), the Gold Ore Mining Sector ($61.3 million), and the Other Nonmetallic Minerals Sector ($50.1 million). These three sectors make up 54.5 percent of total Pershing County total value of output.

5.2 Grazing/Ranching Impacts

Portions of active Bureau of Land Management grazing allotments would be closed to grazing with implementation of the FRTC Modernization. Because grazing permits are generally part of a ranch's overall grazing system involving other sources of forage on private land, a change in federal grazing can affect the operation of the entire ranching enterprise (Foulke et al, 2006). Using data provided by the Bureau of Land Management (2017a), grazing permits that would be impacted by the FRTC Modernization were identified. The base property information associated with the impacted grazing permits was used to evaluate where the economic impacts of reduced AUMs would occur. The economic impacts of reduced AUMs were determined based on where the base property is located, which is often the same location as the ranch headquarters, but occasionally the base property supporting the public land grazing permit is located separately from the ranch headquarters.

Because ranching operations have economic linkages with other economic sectors in the county of the base property, changes in public land grazing also have impacts to the county economy where the base property is located. In this section, the counties that would potentially be impacted because of base property locations are Churchill, Lander, Mineral, and Pershing Counties in Nevada, and Plumas County in California.

The Bureau of Land Management provided information in regards to allotments, base property location, and minimum and maximum potential AUM reductions by grazing allotment for Alternatives 1, 2, and 3. Table 16 shows potential minimum and maximum AUMs reduced from FRTC Modernization for Alternatives 1 and 2. Table 17 shows potential minimum and maximum AUMs reduced from FRTC Modernization for Alternative 3.

Table 16. Total AUMs, Minimum and Maximum AUMs Lost, and Base Property Location of Allotments Impacted by Alternatives 1 and 2

Alternatives 1 and 2				
Allotment Name	**County of Base Property**	**Total AUMs**	**Minimum AUMs Lost**	**Maximum AUMs Lost**
Horse Mountain	Plumas, CA	3,000	67	137
Lahontan	Churchill	1,155	442	618
Bell Flat	Churchill	3,688	2,987	3,233
Eastgate	Churchill	9,767	22	33
La Beau Flat	Lander	3,035	1,003	1,056
Philips Well	Churchill	1,450	969	1,058
Pilot Table Mountain	Mineral	5,667	36	317
Copper Kettle	Churchill	2,333	286	948
Humboldt Sink (Summer)	Churchill	63	8	26
Humboldt Sink (Winter)	Churchill	1,516	1	19
Rochester	Pershing	777	34	86
White Cloud	Churchill	1,885	539	1,046
	TOTAL	**34,336**	**6,394**	**8,577**

Table 17. Total AUMs, Minimum and Maximum AUMs Lost, and Base Property Location of Allotments Impacted by Alternatives 3

Allotment Name	County of Base Camp	Total AUMs	Minimum AUMs Lost	Maximum AUMs Lost
Bell Flat	Churchill	3,688	2,483	3,325
Copper Kettle	Churchill	2,339	286	948
Eastgate	Churchill	9,767	1,556	1,822
Humboldt Sink (Summer)	Churchill	63	8	26
Humboldt Sink	Churchill	1,516	1	19
Lahontan	Churchill	1,155	442	618
Phillips Well	Churchill	1,450	1,288	1,395
White Cloud	Churchill	1,885	539	1,046
La Beau Flat	Lander	3,035	1,003	1,056
Pilot Table Mountain	Mineral	5,667	213	487
Rochester	Pershing	777	34	86
Horse Mountain	Plumas, CA	3,000	67	137
Total		**34,342**	**7,920**	**10,965**

The economic impact of changing forage use and availability starts with an estimate of the economic value of the grazing capacity potentially eliminated or redirected (Bartlett, et.al. 2002). These assessments and values are often controversial because of the difficulty in estimating the value of a grazing permit on Federal land.

Federal grazing fees are set by statute and take place in a highly regulated environment; therefore, they do not have a ready analogue in the private market. Compounding this difficulty, there are different valuation approaches that can be used. Four different valuation methods were evaluated to determine the most appropriate approach for analyzing potential economic impacts related to range livestock and a permanent reduction in AUMs. These methods are discussed below.

One method evaluated was to use a replacement cost approach to valuation. This method estimates the value of a Federal grazing permit based on the cost of replacing the lost forage previously accessible under a Federal grazing permit with private forage. In the area of Nevada around Fallon, the cost of private forage replacement valuation was estimated to be $9.90 per AUM (U.S. Department of Agriculture, 2018). Appendix C provides the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and

maximum reductions in AUMs for Alternatives 1, 2, and 3 under this methodology (see Tables C-1, C-2, and C-3).

A second method evaluated for valuing AUMs was to use a cow-calf costs and return budget developed for Eureka County by Curtis et al. (2005). Under that methodology, the AUM value of production was estimated to be $38. This value was based on production practices and materials considered typical of a well-managed beef cattle operation in the region as determined by a producer panel conducted in November of 2004 (over 15 years ago); however, costs, materials, and practices are not applicable to every operation because production practices vary among ranchers within the region (Curtis et al., 2005). Appendix C provides the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and maximum reductions in AUMs for Alternatives 1, 2, and 3 under this methodology (see Tables C-4, C-5, and C-6).

A third methodology evaluated was to consider the contribution of a Federal grazing permit to the market value of a ranch property as a whole. This would include considering the value for livestock production and other intrinsic attributes such as exclusive access to permits, the desirable ranching and rural lifestyle, open spaces, and the solitude and tranquil experiences realized or perceived to exist when using public lands for grazing (Bartlett et al., 2002). This approach used a method published by Rimbey et al. (2007) and Torell et al. (2012) that estimated permit values ranging from approximately $100 to $350 per AUM based on situations where ranch operations were highly dependent on federal land grazing. These values were similar to capitalized return reductions estimated by Torell et al. (2014). Torell is notable in working with various co-authors [(Torell & Fowler, 1986; Torell & Doll, 1991; Torell & Kincaid, 1996; Torell & Bailey, 2000; Xu et al., 1994)] to explore how amenity and lifestyle attributes of ranch ownership influence ranch values (Bartlett et al., 2002). Specifically, Torell developed hedonic models (which use regression analysis to break down the price of an item into separate components) that included dummy variables (typically used in regression models) like percent of grazing capacity coming from public lands, time of sale, ranch size, rangeland productivity, house and building values, and cultivated acreage. Then, Torell and Bailey (2000) included aesthetic values like mountainous terrain and desirable quality of life factors. Bartlett et al. (2002) further expanded the model to include exclusive access to permits, the desirable ranching

and rural lifestyle, open spaces, and the solitude and tranquil experiences realized or perceived to exist when using public lands for grazing. Since no formal market exists for these variables, this approach to economic valuation is highly dependent on variable human factors and results in a wide range of AUM valuation with the potential to skew outputs. Appendix C provides the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and maximum reductions in AUMs for Alternatives 1, 2, and 3 under this methodology (see Tables C-8 through C-12).

The fourth method applied a production function to valuation. This method estimates the value of a Federal grazing permit based on the market value of a cow-calf produced by a rancher. Following procedures for valuing AUMs from referenced studies by Torell et al. (2002), Alevy et al. (2006), and Taylor et al. (2004), a State of Nevada average cow-calf budget was derived to estimate AUM value for Federal Grazing. Based on 2015 University of Nevada Cooperative Extension cow-calf budgets and price indexing, a state average cow-calf budget for the State of Nevada was developed. Using the state average cow-calf budget, per AUM valuation of production was estimated to be $56.83 per AUM.

Based on a review of the four methodologies for determining the socioeconomic impacts of potentially reduced AUMs on Federal grazing permits, the Navy concluded that the production function to valuation method, where the value per AUM was determined to be $56.83 (a historical figure for Nevada), was the most appropriate methodology for valuing AUMs. The AUM value of $56.83 is considered the most appropriate methodology to use in analyzing potential economic impacts to cattle grazing generally because it uses variables (e.g., commodity prices, cattle prices) that remain consistent across all permits (as listed in Table 16 and Table 17) with respect to which there would be a reduction in AUMs as a result of the Proposed Action, and because it is tied to actual ranch productivity and revenue. This methodology is used for purposes of estimating potential socioeconomic impacts. If the Proposed Action is implemented, the economic impacts to individual permit holders would likely vary on a case-by-case basis in light of the particular economic factors pertaining to each ranch operation, including alternative forage availability and the economic position of each rancher or ranching family. Table 18 shows the projected range of AUM loss and production value loss as a result of the implementation of

Alternatives 1 and 2. Table 19 shows the projected range of AUM loss and production value loss as a result of the implementation of Alternatives 3.

Table 18. Minimum and Maximum Value Estimates of Reduced AUMs and Value of Reduced AUMs by Impacted County from Alternatives 1 and 2

County	Alternative 1 and Alterative 2			Alternative 1 and Alternative 2 $56.83/AUM	
	Total AUMs	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill	21,857	5,254	6,981	$298,585	$396,730
Lander	3,035	1,003	1,056	$57,000	$60,012
Mineral	5,667	36	317	$2,046	$18,015
Pershing	777	34	86	$1,932	$4,887
Plumas	3,000	67	137	$3,808	$7,786

Table 19. Minimum and Maximum Value Estimates of Reduced AUMs and Value of Reduced AUMs by Impacted County from Alternative 3

County	Alternative 3			Alternative 3 at $56.83 per AUM	
	Total AUMs	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill	21,863	6,603	9,199	$375,249	$522,779
Lander	3,035	1,003	1,056	$57,000	$60,012
Mineral	5,667	213	487	$12,105	$27,676
Pershing	777	34	86	$1,932	$4,887
Plumas	3,000	67	137	$3,808	$7,786

Because of economic linkages between ranching operations with other local economic sectors, reductions in local ranching activity would impact total county economic activity. Tables 20 through 23 show the value of output, employment, and labor income (labor income is employee compensation and proprietor income) impacts of reduced public land grazing for county economies associated with base properties in Churchill, Lander, Mineral, and Pershing Counties, Nevada, and Plumas County, California. Additionally, Tables 24 and 25 show estimated labor income reductions for impacted counties with the minimum and maximum reductions in AUMs valued at $56.83 per AUM.

Table 20. Estimated Loss in Value of Output for Impacted Areas by Minimum and Maximum Reductions in AUMs for Alternatives 1 and 2

Area	Alternatives 1 and 2	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	$298,585	$396,730
Secondary	$91,410	$121,455
Total	**$389,995**	**$518,185**
Lander		
Direct	$5,700	$60,012
Secondary	$15,464	$16,269
Total	**$21,164**	**$76,281**
Mineral		
Direct	$2,046	$18,025
Secondary	$126	$1,103
Total	**$2,172**	**$19,128**
Pershing		
Direct	$1,932	$4,887
Secondary	$229	$574
Total	**$2,161**	**$5,461**
Plumas, CA		
Direct	$3,808	$7,786
Secondary	$1,097	$2,245
Total	**$4,905**	**$10,031**

Table 21. Estimated Loss in Value of Output for Impacted Areas by Minimum and Maximum Reductions in AUMs under Alternative 3

Area	Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	$375,249	$522,730
Secondary	$114,877	$160,028
Total	$490,126	$682,758
Lander		
Direct	$57,000	$60,012
Secondary	$15,464	$16,269
Total	$72,464	$76,281

Area	Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Mineral		
Direct	$12,105	$27,676
Secondary	$740	$1,694
Total	$12,845	$29,370
Pershing		
Direct	$1,932	$4,887
Secondary	$229	$574
Total	$2,161	$5,461
Plumas, CA		
Direct	$3,808	$7,786
Secondary	$1,097	$2,245
Total	$4,905	$10,031

Table 22. Estimated Employment Loss for Impacted Counties by Minimum and Maximum Reductions in AUMs for Alternatives 1 and 2

Area	Alternatives 1 and 2	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	4.19	5.6
Secondary	0.70	1.0
Total	**4.89**	**6.6**
Lander		
Direct	0.86	0.92
Secondary	0.11	0.11
Total	**0.97**	**1.03**
Mineral		
Direct	0.08	3.30
Secondary	0.00	0.08
Total	**0.08**	**3.38**
Pershing		
Direct	0.01	0.02
Secondary	0.01	0.01
Total	**0.02**	**0.03**
Plumas, CA		
Direct	0.02	0.03
Secondary	0.01	0.02
Total	**0.03**	**0.05**

Table 23. Estimated Employment Loss for Impacted Counties by Minimum and Maximum Reduction in AUMs Alternative 3

Area	Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	5.28	7.35
Secondary	0.92	1.26
Total	**6.2**	**8.61**
Lander		
Direct	0.86	0.92
Secondary	0.11	0.11
Total	**0.97**	**1.03**
Mineral		
Direct	2.22	5.07
Secondary	0.05	0.12
Total	**2.27**	**5.19**
Pershing		
Direct	0.01	0.02
Secondary	0.01	0.01
Total	**0.02**	**0.03**
Plumas, CA		
Direct	0.02	0.03
Secondary	0.01	0.02
Total	**0.03**	**0.05**

Table 24. Estimated Labor Income Reductions for Impacted Counties by Minimum and Maximum Reductions in AUMs for Alternatives 1 and 2

Area	Alternatives 1 and 2	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	$108,031	$144,338
Secondary	$29,740	$39,516
Total	**$137,771**	**$183,854**
Lander		
Direct	$21,824	$22,978
Secondary	$3,792	$3,993
Total	**$25,616**	**$26,971**
Mineral		
Direct	$434	$3,825

Area	Alternatives 1 and 2	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Secondary	$39	$345
Total	**$473**	**$4,170**
Pershing		
Direct	$419	$1,059
Secondary	$68	$172
Total	**$487**	**$1,231**
Plumas, CA		
Direct	$852	$1,742
Secondary	$297	$607
Total	**$1,149**	**$2,349**

Table 25. Estimated Labor Income Reduction for Impacted Counties for Minimum and Maximum Reductions in AUMs for Alternative 3

Area	Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill		
Direct	$108,031	$144,338
Secondary	$29,740	$39,516
Total	**$137,771**	**$183,854**
Lander		
Direct	$21,824	$22,978
Secondary	$3,792	$3,993
Total	**$25,616**	**$26,971**
Mineral		
Direct	$434	$3,825
Secondary	$39	$345
Total	$473	$4,170
Pershing		
Direct	$419	$1,059
Secondary	$68	$172
Total	**$487**	**$1,231**
Plumas, CA		
Direct	$852	$1,742
Secondary	$297	$607
Total	**$1,149**	**$2,349**

5.3 Mining and Geothermal Impacts

Access to geothermal power plant facilities and infrastructure, including miles of power transmission lines, both via road and air, is critical to maintaining the financial viability, safety, and efficient operation of the facilities. For example, inefficient power transmission due to longer than necessary transmission lines would increase operating costs and reduce revenue for companies that own the power plants and potentially increase the cost of geothermal power for consumers. Limited access to facilities could also restrict or prevent future development.

The BLM classifies minerals and energy for development into three categories: locatable, leasable, and salable. Locatable minerals are those which, when found in valuable deposits, can be acquired under the General Mining Law of 1872, as amended. Examples of locatable minerals include, but are not limited to, those minerals containing gold, silver, tungsten, fluorite, copper, lead, and zinc. Examples of leasable minerals include, but are not limited to, oil, gas, coal, oil shale, and geothermal resources. (17 Stat. 91; 30 U.S.C. 22 et seq.). The Geothermal Steam Act (30 U.S.C. 1001 et seq.) regulates geothermal resources. Salable minerals (mineral materials, 43 Code of Federal Regulations 3600) are common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay.

There are no active mines located within the proposed withdrawal areas (with the exception of a portion of Bell Mountain); however, aspects of mining operations within the vicinity of the proposed withdrawal areas could potentially be affected if they are placed into withdrawal status. Other entities own large mining claims and geothermal opportunities on or adjacent to the proposed withdrawal, and their ability to exploit these claims could be affected by placing the public land into withdrawal status. The following provides an analysis of potential locatable, leasable, and salable minerals and energy opportunities (over the next 20 years) that could be impacted under Alternatives 1, 2, and 3.

Locatable. Depending on the market for gold, if no withdrawal were to occur and if lands currently available for such potential future exploration and development were not otherwise restricted, there may be the opportunity for multiple exploration projects within the proposed withdrawal and expansion area. One reasonably foreseeable scenario is that such exploration activity could potentially result in the discovery of 1 open-pit deposit, which could potentially employ between 100 and 300 people. During construction, the number of employees

on such a site would typically be 2 to 3 times larger than the long-term staff for mine and milling operations. Any such potential deposit would likely be located in or adjacent to areas of known potential for gold or silver. The long-term estimates of commodity prices (for the metals which might be produced because of such a discovery) in the economic and financial modeling are of critical importance to the economic viability of any such potential new deposits. A typical Nevada open-pit metal mine is expected to contain between 5 and 90 million tons of ore, with a probable size of 15 million tons, averaging 0.06 troy ounces of gold per ton.

Based on historic mineral exploration activity, and known occurrences in the planning area, a moderate amount of exploration for industrial minerals, mainly lithium, could be expected to occur during the next 20 years. Exploration activity would not be expected to result in the discovery of an economically mineable deposit. In spite of the low probability of such a discovery, the following scenario is based on mine models developed by the U.S. Bureau of Mines: an industrial mineral deposit (if one were to be discovered) would be expected to contain between 50,000 and 120,000 tons of ore, most probably about 85,000 tons, with an assumed moisture content of 25 percent.

Leasable. It is reasonably foreseeable that exploration drilling would occur on all existing geothermal leases and that additional geothermal leases would be sought within the Study Area, including in the proposed Dixie Valley Training Area. Some of the exploration drilling could potentially lead to more exhaustive exploration efforts, with a few such efforts potentially leading to the discovery of commercially-viable geothermal resources (e.g., resources capable of supporting a 15-megawatt geothermal power plant).

Due to potential lithium deposits, it is possible that there would be an attempt to develop a lithium brine operation in the Study Area. Brine operations can require large amounts of land: a current brine operation in Clayton Valley, Nevada, located outside of the Study Area, claims to have a total surface disturbance of 26,000 acres. Typical viable lithium carbonate operations produce 30,000 to 35,000 tons per year of finished product.

Salable. It is possible that one new sand and gravel deposit with good quality material could potentially be developed in easily accessible areas (such as within a few miles of major roads). It is also possible that one new rock aggregate deposit of good quality material could potentially be developed in easily accessible areas (such as within a few miles of major roads). It

is possible that one new decorative stone collecting site could potentially be designated to meet the increase in demand.

While reasonable foreseeable economic impacts associated with lost mining and geothermal opportunities cannot be definitively determined at this time because of the variability of the market, there is the potential that significant economic impacts could occur due to the potential loss of mining and geothermal opportunities under Alternatives 1, 2, and 3.

5.4 Recreation and Tourism Impacts

Public lands are characterized as having multiple uses and an important part of those multiple uses is wildlife and recreation activities. These activities range from non-consumptive activities such as viewing of wildlife to more consumptive activities such as hunting and fishing. These activities occur primarily on public lands.

Other recreational activities such as OHV riding, camping, viewing of wildlife, hiking, and mountain biking would be affected by live-fire range expansion (B-16, B-17, and B-20) because public access would be restricted on these four ranges. However, the extent of the economic impacts of these closed areas would depend on the availability and access of alternative areas for public access.

Because of economic linkages between recreation and tourism activities with other local economic sectors, reductions in local recreation and tourism would impact total county economic activity. Similar to the Nevada Test and Training Range Study (Leidos, Inc., 2017), there are no formal procedures to estimate the number of tourists that visit the public lands and associated reduced revenues as a result of implementation of the FRTC Modernization. Therefore, assumptions used for the Nevada Test and Training Range Study in regards to calculating potential tourism revenues were applied. As such, a value per acre was extrapolated using Bureau of Land Management's estimated economic impact of recreation activities on BLM land throughout Nevada (approximately 47.5 million acres) valued in 2016 at $507.9 million, a value of $10.69 per acre (U.S. Department of Interior, 2017b).

For the FRTC Modernization, B-16, B-17, B-19, and B-20 would not allow public recreation access, but public access would be allowed in the DVTA. This would mean that, for Alternatives 1 and 2, there would be 327,742 acres and, under Alternative 3, there would be

362,189 acres of BLM land that would be withdrawn from hiking and biking. Using the factor of $10.69 per acre as discussed earlier, the impact of BLM acres lost due to FRTC from reduced hiking and biking activities would be estimated to be $3,503,562 for Alternatives 1 and 2 and $3,871,800 under Alternative 3.

For hunting impacts, estimated recreational impacts from the FRTC Modernization used data provided by the Nevada Department of Wildlife (NDOW). The impacts to tags sold for big game are shown in Table 26. The NDOW designates hunting areas in the state by Hunting Units. Hunting units and associated species and hunt type that would be affected by the FRTC Modernization are listed in Table 26, 27, 28, and 29. For the 2017 baseline, NDOW sold 16,477 applications with a baseline revenue of $1.27 million. Under Alternative 1, it is anticipated that 5,533 applications would be lost with 59 resident and 5 non-resident tags (Table 27). This would yield an anticipated loss in revenues from tags of approximately $373,179 to the state. The loss includes state revenue and matching federal Pittman-Robinson Act grant dollars. The Pittman-Robertson Act of 1937 (Federal Aid in Wildlife Restoration Act), collects an 11 percent excise tax paid by manufactures on firearms, ammunition, and archery equipment. This tax provides grant funds for wildlife and habitat conservation projects to the states. The funding is distributed by the USFWS to state wildlife agencies, such as the Nevada Department of Wildlife, on an annual basis. When combined with state license and tag sales, these two sources constitute the majority of funding for habitat and wildlife conservation projects. Under Alternatives 2 and 3 there would be less application reduction, lost tags, and anticipated financial loss to NDOW (Tables 28 and 29).

Table 26. Baseline Revenues from Nevada Department of Wildlife Tag Application and Sales, 2017

Species and Hunt Type	Hunting Unit	Total Applications (2017)	Total Resident Hunters (2017)	Total Non-resident hunters (2017)	Baseline Revenue (1)
Desert bighorn	181	5,504	16	2	$351,192
Desert bighorn	044, 182	2,314	12	2	$157,264
Desert bighorn	183	3,327	14	2	$219,308
Mule deer (Junior)	181-184	237	70	0	$33,260
Mule deer (Any Legal)	181-184	1,498	150	10	$146,480
Mule deer (Muzzleloader)	181-184	193	15	2	$18,820
Mule deer (Archery)	181-184	138	40	4	$25,480
Pronghorn (Any Legal)	181-184	1,074	55	6	$96,920
Pronghorn (Archery)	181-184	118	25	3	$22,340
Pronghorn, Horns Shorter	181-184	373	20	0	$30,220
Pronghorn (Any Legal)	205-208	396	25	3	$39,020
Pronghorn (Archery)	205-208	34	14	1	$9,348
Pronghorn (Any Legal)	043-046	1,189	65	7	$109,560
Pronghorn (Archery)	043-046	82	20	0	$12,760
	TOTALS	**16,477**	**541**	**42**	**$1,271,972**

(1) Baseline Revenue = Includes State Revenue and Matching Federal PR Grant Dollars. (Total Applications * $15.00) + (Resident Hunters * Resident License and Tag) + (Non-Resident Hunters * Non-Resident License and Tag)
Source: Nevada Department of Wildlife, 2018.

Table 27. Projected Annual Financial Losses to Nevada Department of Wildlife from Lost Tag Applications and Sales under Alternative 1

Species and Hunt Type	Hunting Unit	Anticipated Reduction (2)	Applications Lost	Resident Tags Lost	Non Resident Tags Lost	Anticipated Financial Loss (3)
Desert bighorn	181	90%	4,954	14	2	$316,073
Desert bighorn	044, 182	0%	0	0	0	$ -
Desert bighorn	183	0%	0	0	0	$ -
Mule deer (Junior)	181-184	5%	12	4	0	$1,663
Mule deer (Any Legal)	181-184	5%	75	8	1	$7,324
Mule deer (Muzzleloader)	181-184	5%	10	1	0	$941
Mule deer (Archery)	181-184	5%	7	2	0	$1,274
Pronghorn (Any Legal)	181-184	25%	269	14	2	$24,230
Pronghorn (Archery)	181-184	25%	30	6	1	$5,585
Pronghorn, Horns Shorter	181-184	25%	93	5	0	$7,555
Pronghorn (Any Legal)	205-208	5%	20	1	0	$1,951
Pronghorn (Archery)	205-208	6%	2	1	0	$467
Pronghorn (Any Legal)	043-046	5%	59	3	0	$5,478
Pronghorn (Archery)	043-046	5%	4	1	0	$638
		TOTALS	**5,535**	**60**	**6**	**$373,179**

(2) Anticipated Loss = Assumption that tag applications and tags issued will decline proportionally to loss of public access from withdrawal.
(3) Anticipated Financial Loss = Includes State Revenue and Matching Federal PR Grant Dollars. (Total Applications * $15.00) + (Resident Hunters * Resident License and Tag) + (Non-Resident Hunters * Non-Resident License and Tag) * (Anticipated Reduction)
Source, Nevada Department of Wildlife, 2018.

Table 28. Projected Annual Financial Losses to Nevada Department of Wildlife from Lost Tag Application and Sales under Alternative 2

Species and Hunt Type	Hunting Unit	Anticipated Reduction (2)	Applications Lost	Resident Tags Lost	Non Resident Tags Lost	Anticipated Financial Loss (3)
Desert bighorn	181	0%	0	0	0	$ -
Desert bighorn	044, 182	0%	0	0	0	$ -
Desert bighorn	183	0%	0	0	0	$ -
Mule deer (Junior)	181-184	5%	12	4	0	$1,663
Mule deer (Any Legal)	181-184	5%	75	8	1	$7,324
Mule deer (Muzzleloader)	181-184	5%	10	1	0	$941
Mule deer (Archery)	181-184	5%	7	2	0	$1,274
Pronghorn (Any Legal)	181-184	25%	269	14	2	$24,230
Pronghorn (Archery)	181-184	25%	30	6	1	$5,585
Pronghorn, Horns Shorter	181-184	25%	93	5	0	$7,555
Pronghorn (Any Legal)	205-208	5%	20	1	0	$1,951
Pronghorn (Archery)	205-208	6%	2	1	0	$467
Pronghorn (Any Legal)	043-046	5%	59	3	0	$5,478
Pronghorn (Archery)	043-046	5%	4	1	0	$638
		TOTALS	**581**	**46**	**4**	**$57,106**

(2) Anticipated Loss = Assumption that tag applications and tags issued will decline proportionally to loss of public access from withdrawal.

(3) Anticipated Financial Loss = Includes State Revenue and Matching Federal PR Grant Dollars. (Total Applications * $15.00) + (Resident Hunters * Resident License and Tag) + (Non-Resident Hunters * Non-Resident License and Tag) * (Anticipated Reduction)

Source: Nevada Department of Wildlife, 2018.

Table 29. Projected Annual Financial Losses to Nevada Department of Wildlife from Lost Tag Application and Sales under Alternative 3

Species and Hunt Type	Hunting Unit	Anticipated Reduction (2)	Applications Lost	Resident Tags Lost	Non Resident Tags Lost	Anticipated Financial Loss (3)
Desert bighorn	181	0%	0	0	0	$ -
Desert bighorn	044, 182	0%	0	0	0	$ -
Desert bighorn	183	0%	0	0	0	$ -
Mule deer (Junior)	181-184	5%	12	4	0	$1,663
Mule deer (Any Legal)	181-184	5%	75	8	1	$7,324
Mule deer (Muzzleloader)	181-184	5%	10	1	0	$941
Mule deer (Archery)	181-184	5%	7	2	0	$1,274
Pronghorn (Any Legal)	181-184	30%	322	17	2	$29,076
Pronghorn (Archery)	181-184	30%	35	8	1	$6,702
Pronghorn, Horns Shorter	181-184	30%	112	6	0	$9,066
Pronghorn (Any Legal)	205-208	10%	40	3	0	$3,902
Pronghorn (Archery)	205-208	9%	3	1	0	$935
Pronghorn (Any Legal)	043-046	5%	59	3	0	$5,478
Pronghorn (Archery)	043-046	5%	4	1	0	$638
TOTALS			**679**	**54**	**4**	**$66,999**

(2) Anticipated Loss = Assumption that tag applications and tags issued will decline proportionally to loss of public access from withdrawal.

(3) Anticipated Financial Loss = Includes State Revenue and Matching Federal PR Grant Dollars. (Total Applications * $15.00) + (Resident Hunters * Resident License and Tag) + (Non-Resident Hunters * Non-Resident License and Tag) * (Anticipated Reduction)

Source: Nevada Department of Wildlife, 2018.

In addition to lost hunting tags sold, there is an economic loss to affected counties from reduced access for hunting because of how much big and small game hunters contribute to the overall economy. Economic impacts from reduced access for hunting can affect retail sales by resident and non-resident hunters. Those that hunt in the area spend money on hotels, gas, food, etc. An analysis of these impacts is provided below.

Total baseline economic value for big game hunting is shown in Table 30. Using U.S. Fish and Wildlife Service (2012) factor of economic impact by hunter days as $319.07, potential economic impacts of reduced hunting were derived. The potential economic impacts of a reduction in big game hunting for Alternatives 1, 2, and 3 are shown in Tables 31 through 33. Likewise, Table 34 shows the allocation amongst the nearby counties of hunting area by hunt type. This information is used to estimate potential lost economic activity by county for big game hunting.

Table 35 shows total baseline economic values for small game hunting. Again, the U.S. Fish and Wildlife Service factor of $319.07 per hunter day was used to determine potential economic losses associated with the access reductions for small game hunting. Table 36 shows the impact by county for selected small game hunting lost by FRTC Modernization under Alternatives 1, 2, and 3.

Table 30. Baseline Economic Values for Big Game Hunting, 2017

Species and Hunt Type	Unit	Total Hunters	Total Non-Hunters	Avg. Hunt Days/ Hunter	Avg. Scout Days/ Hunter	Total Days Afield	Total Economic Value (1)
Desert bighorn	181	18	72	4.9	5.78	961	$306,690
Desert bighorn	044, 182	14	56	4.73	4.51	647	$206,374
Desert bighorn	183	16	64	3.61	5.4	721	$229,986
Mule deer (Junior)	181-184	70	140	4.65	2.25	1449	$462,332
Mule deer (Any Legal)	181-184	160	320	4.58	2.1	3206	$1,023,066
Mule deer (Muzzleloader)	181-184	17	34	4.62	2.43	360	$114,722
Mule deer (Archery)	181-184	44	88	5.85	2.8	1142	$364,314
Pronghorn (Any Legal)	181-184	61	122	2.14	1.98	754	$240,566
Pronghorn (Archery)	181-184	28	56	3.57	3.58	601	$191,633
Pronghorn, Horns Shorter	181-184	20	40	2.14	1.98	247	$78,874
Pronghorn (Any Legal)	205-208	28	56	2.14	1.98	346	$110,424
Pronghorn (Archery)	205-208	15	30	3.57	3.58	322	$102,661
Pronghorn (Any Legal)	043-046	72	144	2.14	1.98	890	$283,947
Pronghorn (Archery)	043-046	20	40	3.57	3.58	429	$136,881
	TOTALS	**583**	**1,262**	**52**	**44**	**12,075**	**$3,852,470**

(1) Economic Value assumes each hunter is accompanied by 2–4 non-hunters for assistance that make expenditures in line with those of the hunter.
Source: Nevada Department of Wildlife, 2018

Table 31. Potential Economic Impacts from Reduced Big Game Hunting Under Alternative 1

Species and Hunt Type	Hunting Unit	Anticipated Reduction	Economic Loss			
			Churchill County	Mineral County	Nye County	Pershing County
Desert bighorn	181	90%	$234,618	$27,602	$13,801	$ -
Desert bighorn	044, 182	0%	$ -	$ -	$ -	$ -
Desert bighorn	183	0%	$ -	$ -	$ -	$ -
Mule deer (Junior)	181-184	5%	$23,117	$ -	$ -	$ -
Mule deer (Any Legal)	181-184	5%	$51,153	$ -	$ -	$ -
Mule deer (Muzzleloader)	181-184	5%	$5,736	$ -	$ -	$ -
Mule deer (Archery)	181-184	5%	$18,216	$ -	$ -	$ -
Pronghorn (Any Legal)	181-184	25%	$60,142	$ -	$ -	$ -
Pronghorn (Archery)	181-184	25%	$47,908	$ -	$ -	$ -
Pronghorn, Horns Shorter	181-184	25%	$19,719	$ -	$ -	$ -
Pronghorn (Any Legal)	205-208	5%	$ -	$3,865	$1,656	$ -
Pronghorn (Archery)	205-208	6%	$ -	$3,593	$1,540	$ -
Pronghorn (Any Legal)	043-046	5%	$2,839	$ -	$ -	$11,358
Pronghorn (Archery)	043-046	5%	$1,369	$ -	$ -	$5,475
		TOTALS	**$464,817**	**$35,060**	**$16,997**	**$16,833**

Source: Nevada Department of Wildlife, 2018

Table 32. Potential Economic Impacts from Reduced Big Game Hunting Under Alternative 2

Species and Hunt Type	Hunting Unit	Anticipated Reduction	Economic Loss			
			Churchill County	Mineral County	Nye County	Pershing County
Desert bighorn	181	0%	$ -	$ -	$ -	$ -
Desert bighorn	044, 182	0%	$ -	$ -	$ -	$ -
Desert bighorn	183	0%	$ -	$ -	$ -	$ -
Mule deer (Junior)	181-184	5%	$23,117	$ -	$ -	$ -
Mule deer (Any Legal)	181-184	5%	$51,153	$ -	$ -	$ -
Mule deer (Muzzleloader)	181-184	5%	$5,736	$ -	$ -	$ -
Mule deer (Archery)	181-184	5%	$18,216	$ -	$ -	$ -
Pronghorn (Any Legal)	181-184	25%	$60,142	$ -	$ -	$ -
Pronghorn (Archery)	181-184	25%	$47,908	$ -	$ -	$ -
Pronghorn, Horns Shorter	181-184	25%	$19,719	$ -	$ -	$ -
Pronghorn (Any Legal)	205-208	5%	$ -	$3,865	$1,656	$ -
Pronghorn (Archery)	205-208	5%	$ -	$3,593	$1,540	$ -
Pronghorn (Any Legal)	043-046	6%	$2,839	$ -	$ -	$11,358
Pronghorn (Archery)	043-046	5%	$1,369	$ -	$ -	$5,475
		TOTALS	**$230,199**	**$7,458**	**$3,196**	**$16,833**

Source: Nevada Department of Wildlife, 2018

Table 33. Potential Economic Impacts from Reduced Big Game Hunting Under Alternative 3

Species and Hunt Type	Hunting Unit	Anticipated Reduction	Economic Loss			
			Churchill County	Mineral County	Nye County	Pershing County
Desert bighorn	181	0%	$ -	$ -	$ -	$ -
Desert bighorn	044, 182	0%	$ -	$ -	$ -	$ -
Desert bighorn	183	0%	$ -	$ -	$ -	$ -
Mule deer (Junior)	181-184	5%	$23,117	$ -	$ -	$ -
Mule deer (Any Legal)	181-184	5%	$51,153	$ -	$ -	$ -
Mule deer (Muzzleloader)	181-184	5%	$5,736	$ -	$ -	$ -
Mule deer (Archery)	181-184	5%	$18,216	$ -	$ -	$ -
Pronghorn (Any Legal)	181-184	30%	$72,170	$ -	$ -	$ -
Pronghorn (Archery)	181-184	30%	$57,490	$ -	$ -	$ -
Pronghorn, Horns Shorter	181-184	30%	$23,662	$ -	$ -	$ -
Pronghorn (Any Legal)	205-208	10%	$ -	$7,730	$3,313	$ -
Pronghorn (Archery)	205-208	10%	$ -	$7,186	$3,080	$ -
Pronghorn (Any Legal)	043-046	5%	$2,839	$ -	$ -	$11,358
Pronghorn (Archery)	043-046	5%	$1,369	$ -	$ -	$5,475
		TOTALS	**$ 255,752**	**$ 14,916**	**$ 6,393**	**$16,833**

Source: Nevada Department of Wildlife, 2018

Table 34. County Allocation of Hunting Types, 2017

Species and Hunt Type	Hunting Unit	Percent of Hunting Area that Overlays a Hunting Unit, FRTC Withdrawal and County Boundary.			
		Churchill	Mineral	Nye	Pershing
Desert bighorn	181	85%	10%	5%	
Desert bighorn	044, 182	100%			
Desert bighorn	183	100%			
Mule deer (Junior)	181-184	100%			
Mule deer (Any Legal)	181-184	100%			
Mule deer (Muzzle)	181-184	100%			
Mule deer (Archery)	181-184	100%			
Pronghorn (Any Legal)	181-184	100%			
Pronghorn (Archery)	181-184	100%			
Pronghorn (Horns Shorter)	181-184	100%			
Pronghorn (Any Legal)	205-208		70%	30%	
Pronghorn (Archery)	205-208		70%	30%	
Pronghorn (Any Legal)	043-046	20%			80%
Pronghorn (Archery)	043-046	20%			80%

Source: Nevada Department of Wildlife, 2018

Table 35. Baseline Economic Values for Small Game Hunting, 2017

Species and Hunt Type	Unit	Total Hunters	Avg. Hunt Days/ Hunter	Avg. Scout Days/ Hunter	Total Days Afield	Total Economic Value (1)
Chukar	Churchill	537	3.3	0	1,748	$ 557,734
Chukar	Mineral	73	3.4	0	244	$ 77,885
Chukar	Pershing	945	3.8	0	3,553	$ 1,133,656
Chukar	Nye	343	3.3	0	1,129	$ 360,358
Calif. Quail	Churchill	287	5.0	0	1,420	$ 453,175
Calif. Quail	Mineral	14	4.6	0	63	$ 20,197
Calif. Quail	Pershing	124	3.8	0	469	$ 149,708
Calif. Quail	Nye	31	25.6	0	788	$ 251,491
Mtn. Quail	Churchill	29	3.1	0	93	$ 29,546
Mtn. Quail	Mineral	13	2.8	0	36	$ 11,455
Mtn. Quail	Pershing	6	3.7	0	22	$ 7,020
Mtn. Quail	Nye	12	2.7	0	32	$ 10,083
Rabbit	Churchill	80	4.5	0	360	$ 114,769
Rabbit	Mineral	14	2.9	0	41	$ 13,082
Rabbit	Pershing	51	3.8	0	192	$ 61,261
Rabbit	Nye	81	5.7	0	466	$ 148,591
TOTALS		**2,640**	-	-	**10,656**	**$ 3,400,011**

(1) Economic Value assumes each hunter is accompanied by 2–4 non-hunters for assistance that make expenditures in line with those of the hunter.
Source: Nevada Department of Wildlife, 2018

Table 36. Potential Economic Impacts from Reduced Small Game Hunting for Alternatives 1, 2, and 3

		Alternative 1		Alternative 2		Alternative 3	
Species and Hunt Type	**County**	**Proportion Lost**	**Economic Loss**	**Proportion Lost**	**Economic Loss**	**Proportion Lost**	**Economic Loss**
Chukar	Churchill	60%	$334,641	60%	$334,641	10%	$55,773
Chukar	Mineral	5%	$3,894	5%	$3,894	5%	$3,894
Chukar	Pershing	5%	$56,683	5%	$56,683	5%	$56,683
Chukar	Nye	5%	$18,018	5%	$18,018	5%	$18,018
Calif. Quail	Churchill	0%	$ -	0%	$ -	0%	$ -
Calif. Quail	Mineral	0%	$ -	0%	$ -	0%	$ -
Calif. Quail	Pershing	5%	$7,485	5%	$7,485	5%	$7,485
Calif. Quail	Nye	0%	$ -	0%	$ -	0%	$ -
Mtn. Quail	Churchill	0%	$ -	0%	$ -	0%	$ -
Mtn. Quail	Mineral	0%	$ -	0%	$ -	0%	$ -
Mtn. Quail	Pershing	0%	$ -	0%	$ -	0%	$ -
Mtn. Quail	Nye	0%	$ -	0%	$ -	0%	$ -
Rabbit	Churchill	20%	$22,954	20%	$22,954	15%	$17,215
Rabbit	Mineral	5%	$654	5%	$654	5%	$654
Rabbit	Pershing	5%	$3,063	5%	$3,063	5%	$3,063
Rabbit	Nye	5%	$7,430	5%	$7,430	5%	$7,430
	TOTALS	**-**	**$454,822**	**-**	**$454,822**	**-**	**$170,215**

Source: Nevada Department of Wildlife, 2018

A reduction in retail sales has a ripple effect on employment in the local economy. With the potential lost economic impacts from reduced access for hunting that affects retail sales by resident and non-resident hunters, there are also a potential impacts associated with a loss in employment and labor income and total value of output with the lost jobs. An analysis of these impacts is presented below.

For Churchill County under Alternative 1 (Table 37) reduced big and small game hunting would have a reduction of approximately $822,412 in total output, 6.5 employees, and $206,518 in labor income respectively. Under Alternative 2 (Table 38), Churchill County, from reduced big and small game hunting activities, would realize approximate reduced total economic impacts of $587,794, 4.7 employees, and $147,602. Under Alternative 3 (Table 39), it is estimated that impacts to Churchill County from reduced big and small game hunting from FRTC Modernization would be a reduction in total county economic activity of $328,740, 6.5 employees, and $206,518 in labor income. Hunting recreational impacts for Mineral, Pershing, and Nye Counties can be discussed similarly using Tables 37, 38, and 39.

Table 37. Estimated Economic, Employment, and Labor Income Impacts from Reduced Hunting in Churchill, Mineral, Pershing, and Nye Counties under Alternative 1

	Counties			
Impacts	**Churchill**	**Mineral**	**Pershing**	**Nye**
Employment				
Direct	5.8	0.3	1.1	0.84
Secondary	0.7	0.0	0.0	0.0
Total	**6.5**	**0.3**	**1.1**	**0.84**
Labor Income				
Direct	$173,107	$13,381	$22,951	$21,264
Secondary	$33,411	$1,329	$1,110	$1,446
Total	**$206,518**	**$14,710**	**$24,061**	**$22,710**
Value of Output				
Direct	$726,361	$35,580	$79,891	$37,414
Secondary	$96,051	$4,028	$4,173	$5,031
Total	**$822,412**	**$39,608**	**$84,064**	**$42,445**

Table 38. Estimated Economic, Employment, and Labor Income Impacts from Reduced Hunting in Churchill, Mineral, Pershing, and Nye Counties under Alternative 2

	Counties			
Impacts	**Churchill**	**Mineral**	**Pershing**	**Nye**
Employment				
Direct	4.2	0.3	0.9	0.6
Secondary	0.5	0.0	0.0	0.0
Total	**4.7**	**0.3**	**0.9**	**0.6**
Labor Income				
Direct	$123,723	$4,055	$22,951	$14,350
Secondary	$23,879	$402	$1,112	$976
Total	**$147,602**	**$4,457**	**$24,063**	**$15,326**
Value of Output				
Direct	$519,144	$10,785	$79,889	$25,241
Secondary	$68,650	$1,221	$4,175	$3,395
Total	**$587,794**	**$12,006**	**$84,064**	**$28,636**

Table 39. Estimated Economic, Employment, and Labor Income Impacts from Reduced Hunting in Churchill, Mineral, Pershing, and Nye Counties under Alternative 3

	Counties			
Impacts	**Churchill**	**Mineral**	**Pershing**	**Nye**
Employment				
Direct	2.2	0.5	0.9	0.6
Secondary	0.2	0.0	0.0	0.0
Total	**2.4**	**0.5**	**0.9**	**0.6**
Labor Income				
Direct	$69,197	$6,575	$22,950	$15,952
Secondary	$13,356	$653	$1,110	$1,084
Total	**$82,553**	**$7,228**	**$24,060**	**$17,036**
Value of Output				
Direct	$290,346	$17,848	$79,890	$28,067
Secondary	$38,394	$1,980	$4,174	$3,774
Total	**$328,740**	**$19,828**	**$84,064**	**$31,841**

5.5 Impacts to Public Revenues

With withdrawal of public lands and potential acquisition of private lands for FRTC, the operation and potential expansions in the livestock, mining, geothermal, water resources, and recreational sectors could be impacted. Withdrawals of land for the FRTC Modernization would not only impact economic sectors but also impact state and local government revenues such as property taxes, sales and use taxes, PILT, etc.

One source of governmental revenues that would be impacted is possessory interest of property. A taxable possessory interest may exist whenever there is a private beneficial use of publicly-owned, non-taxable property. For ranches using public land, the capitalized value of additional production on public lands becomes possessory interest. As discussed by Genter and Tanaka (2002), public land ranches are heterogeneous in their characteristics, including size of ranch, level of annual and seasonal dependency on public lands, and alternative forage by ranch. The degree of reduction in possessory interest would have to be a case-by-case analysis for ranches affected by FRTC Modernization, which is beyond the scope of this study.

With the FRTC Modernization, impacted counties may realize reduced economic activity which would impact sales and use tax collections. In the state of Nevada, sales and use taxes generated in the counties are collected at the state level and reallocated back to the counties. For sales and use taxes, Nevada counties are classified as either guaranteed or export counties. A guaranteed county is allocated a specific amount of sales and use tax each year from the State of Nevada Department of Taxation. These guaranteed counties would not realize a decrease in sales or use tax revenues from changes in local economic activity from the FRTC Modernization. For Churchill and Nye counties, these counties are classified as exporting counties and the sales and use taxes they receive are the amount generated less a percentage for the guaranteed counties pool. For Churchill and Nye counties, the loss of sales and use taxes are estimated to be minimal at less than 1 percent of 2017 annual totals. Given that the state legislature can change allocations procedures of sales and use taxes among Nevada counties during a legislative session, it would be difficult to estimate potential sales and use tax revenue impacts to impacted counties.

As shown in Tables 27, 28, and 29, reduced revenues from lost tag applications and sales are estimated to range from $373,179 under Alternative 1, $57,106 under Alternative 2, and $66,999 under Alternative 3.

A unique aspect of Western States is public lands. Because city, county, and state governmental entities cannot tax the upper level of government, city, county, and state governments cannot tax federal lands. The federal government recognized this problem and passed the PILT legislation in 1976. PILT was created by the federal government to help offset losses in property taxes to county governments due to non-taxable federal lands within their boundaries (U.S. Department of Interior, 2017a). The formula to compute PILT payments is contained in the PILT Act and is based on population, receipt-sharing payments, and amount of federal land within the affected county. A detailed description of PILT and the calculation of PILT payments from FRTC are presented in Appendix A. From Table 10, PILT payments received for Fiscal Year 2018 for impacted counties are shown and all impacted counties for Fiscal Year 2018 received PILT payments based on Formula A. Of interest is that, for Fiscal Year 2017, PILT payments for Nye and Mineral counties were calculated using Formula B of the PILT formula. Individual county payments may increase or decrease from prior years due to changes in computational variables including prior years' payments, inflation, acreage, and population. Also, by statute, acreage and population variables used in the formula to compute payments are subject to annual inflation adjustments by the consumer price index. This shows how variable PILT payments can be and that municipal and county governments should monitor the calculation of PILT every year (U.S. Department of Interior, 2018).

For this analysis, impacts to county level PILT payments from the FRTC Modernization were estimated using Fiscal 2018 data. Tables 40 and 41 show potential impacts to PILT from reductions in public lands from FRTC. Only Lyon County is impacted because, for Fiscal Year 2018, it was the only county not population limited under Formula A. Notably, although Churchill County would have significant reductions in public lands under the FRTC Modernization, it would see no change in Fiscal Year 2018 PILT due to their PILT payment being population limited under Formula A. Even though the proposed expansion would not be realized until 2021 at the earliest, using estimated impacts to county PILT from reduced BLM acreage for Fiscal Year 2018 gives an approximation. Estimating impacts from reduced PILT to counties into the future is challenging and uncertain because procedures change, and PILT can even be eliminated, at the discretion of Congress.

Table 40. Estimated Reductions in 2018 PILT at County Level for Alternatives 1 and 2

Categories	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Acreage Proposed for Withdrawal Under Alternatives 1 and 2	544,902	4,073	84,659	30,177	21,641
2018 PILT Payments ($)	$2,298,812	$2,313,628	$781,024	$3,326,751	$1,112,319
Estimated Reductions in PILT Payments ($)	$ 0	$ 11,038	$ 0	$ 0	$ 0
Percentage Reductions (Based on 2018 PILT)	0.00 %	0.48 %	0.00 %	0.00 %	0.00 %

Table 41. Estimated Reduction in 2018 PILT at County Level for Alternative 3

Categories	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Acreage Proposed for Withdrawal Under Alternatives 3	549,927	4,073	89,099	84,719	21,641
2018 PILT Payments ($)	$2,298,812	$2,313,628	$781,024	$3,326,751	$1,112,319
Estimated Reductions in PILT Payments ($)	$0	$11,038	$0	$0	$0
Percentage Reductions (Based on 2018 PILT)	0.00 %	0.48 %	0.00 %	0.00 %	0.00 %

6. SUMMARY

The FRTC Modernization proposes to withdraw public lands and acquire private lands for training purposes. This expansion would primarily impact Churchill County but also Lyon, Lander, Mineral, Pershing, and Nye Counties of Nevada. This study investigated the socioeconomic impacts of implementation of Alternatives 1, 2, and 3.

To derive the economic, employment, and household income impacts of Alternatives 1, 2, and 3, an input-output model was employed. The model used for the analysis was verified and validated before its use. Impacts on the agricultural (grazing/ranching), mining, geothermal, and recreation and tourism sectors (including hunting), which represent regionally important economic sectors, were derived. Using these projected impacts, the economic effect of the FRTC Modernization on the Study Area counties was estimated. Changes in economic activity were estimated employing two procedures. The first used the decrease in county economic activity as

a percentage of the total value of county output. The second estimated the impact that the FRTC Modernization would have on long-term employment growth in the impacted county.

Since the FRTC Modernization would not occur until 2021, projected employment from 2020 to 2021 could be impacted by the expansion. The estimated loss in employment from the FRTC Modernization was subtracted from county employment projections from 2020 to 2021 by Economic Modeling Specialist Incorporated (Table 42) to give an estimate of how projected employment would be impacted by the FRTC Modernization.

Table 42. Projected Employment Growth for Counties Impacted by FRTC Modernization

Year	Churchill County		Lander County		Mineral County		Pershing County		Nye County	
	Employment	Change	Employment	Change	Employment	Change	Employment	Change	Employment	Change
2017	9,606		3,568		1,709		2,012		12,728	
2018	9,737	131	3,682	114	1,777	68	2,179	167	12,965	237
2019	9,857	120	3,778	96	1,835	58	2,228	49	13,176	211
2020	9,969	112	3,862	84	1,887	52	2,272	44	13,371	195
2021	10,083	114	3,937	75	1,938	51	2,310	38	13,551	180
2022	10,170	87	3,987	50	1,966	28	2,341	31	13,696	145

Source: Economic Modeling Specialist Incorporated, 2018.

From Tables 22, 23, 37, 38, and 39, Churchill County's decreased employment from FRTC Modernization is estimated to be between 7.29 and 15.11 jobs. For Churchill County, the FRTC Modernization would reduce forecasted employment growth from 2020 to 2021 from 114 employees to a range of 98.89 to 106.71 jobs.

Lander County employment from 2020 to 2021 is forecasted to grow by 75 employees (Table 42). From Tables 22, 23, 37, 38, and 39, Lander County's decreased employment from FRTC modernization is estimated to be between 0.97 and 1.03 jobs. For Lander County, FRTC Modernization would reduce forecasted employment growth from 2020 to 2021 from 75 employees to a range of 73.97 to 74.97 jobs.

Mineral County employment from 2020 to 2021 is forecasted to grow by 51 employees (Table 42). From Tables 22, 23, 37, 38, and 39, Mineral County's decreased employment from the FRTC Modernization is estimated to be between 0.38 and 5.69 jobs. For Mineral County,

FRTC Modernization would reduce forecasted employment growth from 2020 to 2021 from 51 employees to a range of 45.71 to 50.62 jobs.

Pershing County employment from 2020 to 2021 is forecasted to grow by 38 employees (Table 42). From Tables 22, 23, 37, 38, and 39, Pershing County's decreased employment from FRTC modernization is estimated to be between 0.11 and 1.13 jobs. For Pershing County, FRTC Modernization would reduce forecasted employment growth from 2020 to 2021 from 38 employees to a range of 36.87 to 37.89 jobs.

Nye County employment from 2020 to 2021 is forecasted to grow by 180 employees (Table 42). From Tables 22, 23, 37, 38, and 39, Nye County's decreased employment from FRTC Modernization is estimated to be between 0.60 and 0.84 jobs. For Nye County, FRTC would reduce forecasted employment growth from 2020 to 2021 from 180 employees to a range of 179.16 to 179.40 jobs.

Since agriculture (specifically grazing) and recreation and tourism are such a large part of the study area's economy, any changes in economic activity to these industries are important. Implementation of the FRTC Modernization would require portions of active BLM grazing allotments to be closed for grazing. Because ranching operations have economic linkages with other economic sectors, changes in public land grazing would have direct and secondary impacts on total economic, employment, and labor income on the local economy. Because it is challenging to place a definitive value on the affected AUMs, it is difficult to estimate the value of a grazing permit on Federal land. The loss of some permitted grazing under any of the action alternatives would be highly localized, and the consequences in terms of the value of this loss would depend on the individual decisions made by the individual ranchers affected by any loss.

The same is true for recreation and tourism (including hunting). Under each of the action alternatives, there would be a potential reduction in the number of hunting tags and an associated loss in revenues from a reduction of tags to the state because state revenue and matching federal Pittman-Robinson Act grant dollars constitute the majority of funding for habitat and wildlife conservation projects. In addition, economic impacts from reduced access for hunting can affect retail sales by resident and non-resident hunters (hunters spend money on hotels, gas, food, etc.). A reduction in retail sales has a ripple effect on employment in the local economy. With the potential lost economic impacts from reduced access for hunting that affects retail sales by

resident and non-resident hunters, there are also potential impacts associated with a loss in employment and labor income and total value of output with the lost jobs.

Geothermal and mining operations are also important to the study area's economy. There is potential for lost economic opportunity if reasonably foreseeable mineral or geothermal developments in expansion area are foregone. While reasonable foreseeable economic impacts associated with lost mining and geothermal opportunities cannot be accurately determined at this time, there is the potential that economic impacts could occur due to the potential loss of mining and geothermal opportunities under Alternatives 1, 2, and 3, particularly employment and household impacts.

Lastly, by withdrawing public lands, there is potential for lost revenues from reduced PILT to impacted Nevada counties. However, from Fiscal Year 2018, calculations for the Nevada counties of Churchill, Mineral, Nye, and Pershing are population limited under Formula A. Therefore, only Lyon County would be impacted by revenues lost from reduced PILT. Given that the prosed withdrawal is not enacted until 2021, it is difficult to determine the impact on future county PILT payments. PILT payments are initiated by the US Congress and procedures to calculate PILT may change or even PILT may not be funded by 2021.

References

Alevy, J., E. Fadali, and T. Harris (2006). Analysis of Impacts of Public Grazing on the Elko County Economy and Mountain City Management Area: Economic Impacts of Federal Grazing in Elko County. University Center for Economic Development, University of Nevada, Reno, University Center Technical Report UCED 2006/07-03.

Bartlett, T., L. A. Torell, N. Rimbey, L. Van Tassell, and D. McCollum (2002) "Valuing Grazing Use on Public Land". Journal of Range Management. 55(5):426-438.

Baumol, W. (2000). "Leontief's Great Leap Forward beyond Quesney, Marx, and von Bortkiewicz". Economic Systems Research, 12(2):141-152.

Bureau of Land Management. (2017a). Rangeland Administration System Reports. Retrieved from https://reports.blm.gov/reports.cfm?application=RAS

Bureau of Land Management. (2017b) Geothermal Energy Data. Retrieved from https://www.blm.gov/programs/energy-and-minerals/renewable-energy/geothermal-energy/data.

Churchill County (2015). Churchill County 2015 Master Plan. Fallon, Nevada.

Curtis, K. R., R. Koewler and W. W. Riggs (2005). Eureka County Forage Establishment and Production Costs, 2004. Reno, Nevada, University of Nevada, Reno Cooperative Extension.

DeLong, J. (2015). "Lovelock Farmers Hit Hard", Reno-Gazette journal, Reno, Nevada.

Foran, B., M. Lenzen, and C. Dey. (2005). Balancing Act – A Triple Bottom Line Account of the Australian Economy, Canberra, ACT, Australia, CSIRO Resource Futures and the University of Sydney.

Foulke, T., R. H. Coupal and D. T. Taylor (2006). Implications for the Regional Economy from Changes in Federal Grazing: Park County, Wyoming. Western Regional Science Association, 45th Annual Meeting, Santa Fe, NM, University of Wyoming Department of Agricultural and Applied Economics.

Gentner, B. and J.A. Tanaka. 2002. Classifying Federal Public Land Grazing Permittees. Journal of Range Management 55(1):2-11.

Holland, D., Geier, H., and Schuster, E. (1997). Using IMPLAN to Identify Rural Development Opportunities. United states Department of Agriculture, U.S. Forest Service, Intermountain research Station, General Technical Report INT-GTR-350.

IMPLAN (2014). Reference Manual (Users Guide to IMPLAN Version 3.0 Software). Retrieved from https://implan.com/index.php?options=com multicategories&view=categories&layout=blog&categories&cid=222:referencemanualusersguidetoimplanversion30software&ltemid=14.

Leidos, Inc. (2017) Nevada Test and Training Range (NTTR): Land Withdrawal Application Packages/Case File and Legislative EIS: Economic Impact Analysis Report. Beavercreek, Ohio.

Leontief, W. (1936). "Quantitative Input-Output Relations in the Economic System of the United States". The Review of Economics and Statistics, 18:105-125.

Miller, R. and Blair, P. (2009) Input-Output Analysis: Foundations and Extensions. Cambridge University Press.

Nevada Bureau of Mines and Geology. (2017). *The Nevada Mineral Industry 2015* (Special Publication MI-2015). Reno, NV: University of Nevada, Reno.

Nevada Department of Agriculture. (2017). An Economic Analysis of the Food and Agriculture Sector in Nevada. Sparks, NV: Nevada Department of Agriculture Administrative Division. Retrieved from http://agri.nv.gov/uploadedFiles/agrinvgov/Content/Resources/Data_and_Reports/econ_analysis_final.pdf.

Nevada Division of Minerals. (2017). *Nevada Geothermal Power Plants*. Carson City, NV: Nevada Commission on Mineral Resources.

Nevada State Demographers Office. (2014). *Nevada County Age, Sex, Race, and Hispanic Origin Estimates and Projections 2000–2032*. Reno, NV: University of Nevada, Reno. Retrieved from http://nvdemography.org/wp-content/uploads/2014/06/2013-Nevada-Summary-Workbook-ASRHO-Estimates-and-Projections-REV-051614-B.pdf

Nevada State Demographer. (2014). 2014 Population Estimates, Nevada Taxation Department, Carson City.

Nevada Department of Wildlife. 2018. Personal conversation and Excel Spreadsheet of Potential Impacts. Reno, Nevada.

Packham, J., T. Griswold, and C. Marchand. (2013). Health Care Workforce in Nevada 2013 Edition. University of Nevada Medical School, Office of Health Professions Research and Policy, Office of State Initiatives, Reno, Nevada.

Perry, R. and M. Visher. (2016). Major Mines of Nevada 2015: Mineral Industries in the Nevada Economy. Nevada Division of Minerals, Carson City, Nevada, Special Publication P-27.

Perry, R. and Visher, M. (2017). Major Mines of Nevada 2016: Mineral industries in Nevada's economy. Nevada Bureau of Mines and Geology

Pratt, M. and G. Rasmussen. 2001. "Determining Your Stocking Rate." Utah State University Cooperative Extension Electronic Publishing. Utah State University, Logan Utah. Retrieved from https://digitalcommons.usu.edu/extension_histall/993/.

Rimbey, N., A. Torell, and J. Tanaka. 2007. "Why Grazing Permits Have Economic Value." Journal of Agricultural and Resource Economics, 32: 20–40

Roberts, S. 2015. "Fallon-Area Dairies Growing with Milk Powder Plant". Nevada Appeal, Carson City, Nevada.

Taylor, D., R. Coupal, T. Folke, and J. Thompson. (2004). The Economic Importance of Livestock Grazing on BLM Land in Fremont County, Wyoming. University of Wyoming, Department of Agricultural and Applied Economics, Laramie, Wyoming.

Torell, L.A., J. Tanaka, J. Ritten, N. Rimbey, D. Taylor, and T. Foulke. (2014) Ranch-Level Economic Impacts of Altering Grazing Policies on Federal Land to Protect the Greater Sage-Grouse. University of Wyoming Cooperative Extension, Laramie, Wyoming, Bulletin B-1258A.

Torell, L., J. Tanaka, N. Rimby, T. Darden, L. Van Tassell, and A. Harp. (2002). Ranch-Level Impacts of Changing Grazing Policies on BLM Land to Protect the Greater Sage-Grouse: Evidence from Idaho, Nevada, and Oregon. Policy Analysis Center for Western Public Lands, Caldwell, Idaho.

Torell, L.A. and J. Fowler (1986) "The Impact of Public Land Grazing Fees on New Mexico Ranch Values". Journal of American Society of Farm Managers and Rural Appraisers. 50(2): 51-55.

Torell, L.A. and J. Doll. (1991) "Public Land Policy and Value of Grazing Permits", Western Journal of Agricultural Economics. 16(1): 174-184.

Torell, L.A. and M. Kincaid (1996) "Public Land policy and the Market Value of New Mexico Ranches". Journal of Range Management. 49(3): 270-276.

Torell, L.A. and S. Bailey (2000) “Is the Profit Motive an Important Determinant of Grazing Land Use and Rancher Motive”. Presented Paper at Western Agricultural Economics Association Annual Meeting, Vancouver, British Columbia, Canada.

Torell, L.A., B. Dixon, and D. McCollum (2012) The Market Value of Ranches and Permits in New Mexico 1996-2010. Las Cruces, New Mexico, New Mexico State University, Agricultural Experiment Station. Report 779.

Truckee-Carson Irrigation District. 2010. Water Conservation Plan. Newlands Project: Fallon, Nevada.

U.S. Census Bureau. (2000a). Profile of General Demographic Characteristics: 2000. Census 2000 Summary File (SF1) 100 Percent Data estimates for the State of Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2000b). Profile of General Demographic Characteristics: 2000. Census 2000 Summary File (SF1) 100 Percent Data estimates for the Churchill County, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2000c). Profile of General Demographic Characteristics: 2000. Census 2000 Summary File (SF1) 100 Percent Data estimates for the City of Fallon. Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2010a). Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data estimates for the State of Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2010b). Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data estimates for Churchill County, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2010c). Profile of General Population and Housing Characteristics: 2010 Demographic Profile Data estimates for City of Fallon, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2015a). *2015 Pershing County Business Patterns*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau. (2015b). *2015 Nye County Business Patterns*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau. (2015c). *2015 Mineral County Business Patterns*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau. (2015d). *2015 Lyon County Business Patterns*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau. (2016a). 2016 Lyon County Business Patterns. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

U.S. Census Bureau. (2016b). 2012-2016 American Community Survey 5-Year Estimates for the City of Fallon, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2016c). 2016 Nye County Business Patterns. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

U.S. Census Bureau. (2016d). 2016 Pershing County Business Patterns. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

U.S. Census Bureau. (2016e). Demographic and Housing Estimates. American Community Survey 2012-2016. 5-Year Estimates for the City of Fallon, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2016f). 2012-2016 American Community Survey 5-Year Estimates for the United States. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2016g). 2012-2016 American Community Survey 5-Year Estimates for the State of Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2016h). 2012-2016 American Community Survey 5-Year Estimates for Churchill County, Nevada. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U.S. Census Bureau. (2016i). 2012-2016 American Community Survey 5-Year Estimates for the State of Nevada, Churchill County, and the City of Fallon. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk

U.S. Department of Agriculture. (2014). Census of Agriculture: Nevada: State and County Data 2012, Volume 1, Geographic Area Series, Number 28, National Agricultural Statics Service, Washington D.C.

U.S. Department of Agriculture. (2009). Census of Agriculture: Nevada: State and County Data 2007, Volume 1, Geographic Area Series, Number 28, National Agricultural Statics Service, Washington D.C.

U.S. Department of Agriculture. (2004). Census of Agriculture: Nevada: State and County Data 2002, Volume 1, Geographic Area Series, Number 28, National Agricultural Statics Service, Washington D.C.

U.S. Department of Agriculture. (2018). Farmland Conversion Impact Rating. Washington, DC: U.S. Department of Agriculture. Retrieved from https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045394.pdf.

U.S. Department of Commerce. (2017). "Table CA25N. Total Full-Time and Part-Time Employment by NAICS Industry". Bureau of Economic Analysis: Washington, D.C.

U.S. Department of Energy. (2017). *2016 Annual U.S. & Global Geothermal Power Production Report*. Washington, DC: Geothermal Energy Association.

U.S. Department of Interior. (2016). Environmental Assessment of 2016 Best in Desert "Vegas to Reno The Long Way Race Event, Bureau of Land Management, DOI-BLM-NV-B020-2016-0041-EA. Washington, D.C.

U.S. Department of Interior (2017a) Fiscal Year 2016: Payment In Lieu of Taxes National Summary. Office of Budget, Washington, D.C.

U.S. Department of Interior (2017b) Total Economic Output and Jobs for Fiscal Year 2016. Bureau of Land Management, Washington, D.C. Retrieved from https://www.blm.gov/sites/blm.gov/files/The%20Investment%20America%202017.pdf

U.S. Department of Interior (2018) Fiscal Year 2018 Payments in Lieu of Taxes: National Summary. Office of Budget: Washington, D.C.

U.S. Department of the Navy. (2014). Integrated Natural Resources Management Plan Naval Air Station Fallon, Fallon, Nevada. AMEC Environment & Infrastructure, Inc.

U.S. Department of Navy (2015). Military Readiness Activities at Fallon Range Training Complex, Nevada: Draft Environmental Impact Statement. Pacific Fleet Environmental Office, Pearl Harbor, Hawaii.

U.S. Department of the Navy. (2016). *NAS Fallon Economic Impact Assessment, May 2016 (using financial data from Fiscal Year 2015)*. Washington, DC: U.S. Department of the Navy.

U.S. Fish and Wildlife Service. (2012). 2011 National Survey of Fishing, Hunting and Wildlife Associated Recreation. National Overview. U.S. Department of Interior, Washington, D.C.

U.S. Geological Survey, Gap Analysis Program (2016). Protected Areas Data Base of the United State (PADUS). Version 1.4.

Xu, F. R. Mittelhammer, and L.A. Torell. (1994) "Modeling Nonnegative via Truncated Logistic and Normal Distributions: An Application to Ranch Land Price Analysis." Journal of Agricultural and Resource Economics. 19(1): 102-114.

Zimmerman, J. and Harris, T. (2000) An Update of Federal and State Land-Based Payments in Nevada. University of Nevada Center for Economic Development.

APPENDIX A: EXPLANATION OF PAYMENT IN LIEU OF TAXES

Payment in Lieu of Taxes

The Payment in Lieu of Taxes (PILT) program began in 1976 following the enactment of Public Law 94-565. Federal PILT payments were designed to supplement other federal land receipt sharing payments and are made to local government units who can spend it for any governmental purpose. Due to its distinction as the largest federal land management agency, the BLM was chosen by the Secretary of Interior to administer the PILT program. The Act has undergone several changes since 1976. In September 1982, it was amended and recorded as Chapter 69, 31 U.S.C. In July 1983, it was amended to clarify the definition of "unit of general local government," and authorized state governments to redistribute payments to smaller units of governments through legislation. The most recent changes occurred following the passage of an Act in 1994 which increased payments to each county. There are three sections in the Act that distribute money to the states: Section 6904, Section 6905, and Section 6902. Table A-1 shows the distribution of funds by section for counties in the state of Nevada.

Section 6904

Section 6904 authorized payments for lands acquired after December 31, 1970 which were additions to the National Park System or National Forest Wilderness Areas. These lands must have been subject to local real property taxes within the five-year period preceding the acquisition by the Federal government. Payments are made annually for five years following the acquisition and are one percent of the fair market value of the lands at the time of acquisition. The annual payments may not exceed the amount of taxes levied on the property during the year previous to the purchase. The Act stipulates Section 6904 payments must be distributed to local governments and school districts, which have incurred losses of real property taxes prior to the acquisition of these lands. Payments are distributed proportional to tax revenues, which were levied by local governments and school districts in the year prior to the acquisition of these lands.

Section 6905

This section specifically applies to land within the Redwood National Park or the Lake Tahoe Basin. Payments are figured the same as Section 6904 but continue until the total amount equals 5 percent of the fair market value of the lands at the time of acquisition. These payments may be used for any governmental purpose.

Section 6902

Section 6902 payments are calculated using one of two equations based on "entitlement lands" within the respective county. Entitlement lands refer to lands owned by the United States Government and include lands in the National Park System, the National Forest System, lands administered by the Bureau of Land Management, or lands involved in government water resource development projects. Other lands included are semi-active installations used for nonindustrial purposes and dredge disposal areas under the jurisdiction of the Secretary of the Army. National Wildlife Reserve areas withdrawn from the public domain, semi-active Army installations used for non-industrial purposes, and some lands donated to the United States Government by State and local governments. NAS Fallon is not a PILT installation. The payment is figured by taking the higher of the following two formulas. Formula A is $2.71 times the number of entitlement land acreage in the county minus the payment made last year. The BLM PILT report clarifies that: "only the amount of Federal land payments actually received by units of government in the prior fiscal year are deducted. If a unit of government receives a Federal land payment but is required by State law to pass all or part of this payment to financially and politically independent school districts, or other single or special purpose district, such redistributed payments are considered to have not been received by the unit of local government and are not deducted from the in-lieu payment. The amounts to be deducted are reported to the Bureau of Land Management each year by the Governor of each State or his delegate." The formula value is restricted by a population payment ceiling figured by multiplying the county's population by the appropriate figure. Populations are based on the most recent census figures. A government may not be credited with a population greater than 50,000 and populations between 5,000 and 50,000 are rounded to the nearest 1,000. If the calculated value of $2.71 times the number of entitlement acres exceeds the ceiling, the ceiling value minus last year's payment is the result of Formula A.

Formula B is much simpler and figured by taking $0.38 times the number of entitlement acres. As with Formula A, the population payment ceiling is binding. Tables A-1, A-2, and A-3 show values used in determining 2018 Nevada PILT payments and Table A-1 shows the entitlement acres by Nevada counties. (U.S. Department of Interior, 2018).

Recent Changes in the PILT Act

By October of 1994, both the House and Senate passed an amendment to the PILT Act that proposed several changes. On the 22nd of the same month, the President enacted the amendment by signing Public Law 103-397. In general, the enactment: "would more than double authorization levels and link authorization levels to future changes in the consumer price index ...[because]...The present system of shared receipts bears no relationship to the direct or indirect burdens placed on local governments by the presence of federal lands." The catalyst for the enactment was a report written by M. Lynne Corn who recognized PILT payments have not kept pace with inflation. The report also concluded PILTs were no longer a true compensation for taxes, were widely fluctuating, had no mechanism to keep the State level from taking advantage of the system; ceiling limits caused problems; and the current formula provided less income to poor counties and more to rich counties.

Table A-1. Federal Payments in Lieu of Taxes in Nevada by County for Fiscal Year 2018

Table 1. Federal Payments in Lieu of Taxes in Nevada by County for Fiscal Year 2018.

County	Entitlement Acres	Revenue Sharing Payments	Unit Population	CEILING	ALTERNATIVE A	ALTERNATIVE B	Adjustments Made This FY	6902 Payments	6902 with 99.9% Prorated	6902 Adjustments for Prior Year	6902 Total Payments
Carson City	42,805	$648	50,000	$3,648,852	$115,354	$16,266	$0	$115,354	$115,272	-$9	$115,263
Churchill	2,158,245	$8,402	24,000	$2,300,638	$2,300,638	$820,133	$0	$2,300,638	$2,300,638	-$189	$2,298,812
Clark	4,818,819	$12,746	50,000	$3,636,754	$3,636,754	$1,831,151	$0	$3,636,754	$3,636,754	-$289	$3,633,878
Douglas	255,828	$4,000	48,000	$3,579,200	$689,294	$97,215	$0	$689,294	$689,294	-$56	$688,748
Elko	7,905,061	$113,468	50,000	$3,536,032	$3,536,032	$3,003,923	$0	$3,536,032	$3,536,032	-$298	$3,533,219
Esmeralda	2,253,223	$26,722	5,000	$117,414	$117,414	$144,136	$0	$144,136	$144,136	-$12	$144,021
Eureka	2,156,826	$23,845	5,000	$325,912	$325,912	$349,757	$0	$349,757	$349,757	-$30	$349,478
Humboldt	4,978,712	$43,229	17,000	$1,760,811	$1,760,811	$1,804,040	$0	$1,804,040	$1,804,040	-$148	$1,802,609
Lander	3,333,712	$34,584	6,000	$990,636	$990,636	$1,025,220	$0	$1,025,220	$1,025,220	-$84	$1,024,407
Lincoln	6,409,987	$23,458	5,000	$888,792	$888,792	$912,250	$0	$912,250	$912,250	-$75	$911,526
Lyon	859,206	$12,993	50,000	$3,636,507	$2,315,455	$326,498	$0	$2,315,455	$2,315,455	-$180	$2,313,628
Mineral	1,936,566	$3,080	5,000	$781,640	$781,640	$735,895	$0	$781,640	$781,640	-$60	$781,024
Nye	8,548,402	$94,707	43,000	$3,329,383	$3,329,383	$3,248,393	$0	$3,329,383	$3,329,383	-$264	$3,326,751
Pershing	2,918,844	$12,957	7,000	$1,113,203	$1,113,203	$1,109,161	$0	$1,113,203	$1,113,203	-$92	$1,112,319
Storey	14,474	$22	5,000	$739,083	$39,203	$5,500	$0	$39,203	$39,203	-$3	$39,172
Washoe	2,934,465	$18,788	50,000	$3,630,712	$3,630,712	$1,115,097	$0	$3,630,712	$3,630,712	-$297	$3,627,832
White Pine	5,192,431	$23,909	10,000	$1,252,891	$1,252,891	$1,276,800	$0	$1,276,800	$1,276,800	-$105	$1,275,787
TOTAL	56,717,606	$457,558			$26,824,124	$17,821,435	$0	$26,999,871	$26,999,789	-$2,191	$26,978,474

Source: U.S. Department of Interior, 2018. **Fiscal Year 2018 Payments in Lieu of Taxes: National Summary.** Office of Budget, Washington, D.C.

Table A-2. Population of Nevada Counties Used for Fiscal Year 2018 PILT

County	Estimated Population	Population Used in PILT Calculations
Carson City	54,745	50,000
Churchill	24,230	24,000
Clark	2,204,079	50,000
Douglas	48,309	48,000
Elko	52,649	50,000
Esmeralda	850	5,000
Eureka	1,961	5,000
Humboldt	16,826	17,000
Lander	5,775	6,000
Lincoln	5,223	5,000
Lyon	54,122	50,000
Mineral	4,457	5,000
Nye	44,202	42,000
Pershing	6,508	7,000
Storey	4,006	5,000
Washoe	460,587	50,000
White Pine	9,592	10,000

Source: U.S. Department of Interior. 2018. Fiscal Year 2018 Payments in Lieu of Taxes: National Summary. Office of Budget, Washington, D.C.

Table A-3. FY 2018 Population Values for PILT Section 6902

If Population is less than or equal to:	Payment shall not exceed the amount composed by multiplying such population by:
5,000	$182.45
6,000	$170.87
7,000	$160.88
8,000	$149.31
9,000	$139.32
10,000	$127.68
11,000	$124.42
12,000	$121.11
13,000	$116.12
14,000	$112.80
15,000	$109.46
16,000	$107.81

If Population is less than or equal to:	Payment shall not exceed the amount composed by multiplying such population by:
17,000	$106.12
18,000	$104.50
19,000	$102.85
20,000	$101.23
21,000	$99.52
22,000	$97.87
23,000	$97.87
24,000	$96.21
25,000	$94.56
26,000	$92.89
27,000	$92.89
28,000	$92.89
29,000	$91.26
30,000	$91.26
31,000	$89.57
32,000	$89.57
33,000	$87.90
34,000	$87.90
35,000	$86.23
36,000	$86.23
37,000	$84.58
38,000	$84.58
39,000	$82.95
40,000	$82.95
41,000	$81.26
42,000	$79.63
43,000	$79.63
44,000	$77.94
45,000	$77.94
46,000	$76.31
47,000	$76.31
48,000	$74.65
49,000	$74.65
50,000	$72.99

Source: U.S. Department of Interior. 2018. Fiscal Year 2018 Payments in Lieu of Taxes: National Summary. Office of Budget, Washington, D.C.

2018 NAS Fallon Acreage Proposed for Withdrawal

The counties up for proposed acreage withdrawal for NAS Fallon are the Nevada counties of Churchill, Lyon, Mineral, Nye and Pershing. Of these counties, only Lyon County is estimated to experience a loss in PILT payments due to acreage withdrawal based on 2018 PILT estimates.

Churchill, Mineral, Nye and Pershing counties receive PILT payments based on the Population Limited Formula A plan. This means Churchill, Mineral, Nye and Pershing counties are capped on PILT payments based on population, not on entitlement acreage. In 2018, Churchill County had a population limited PILT ceiling of $2,300,638. Since Churchill County's non-ceiling Formula A PILT payment was valued at $5,848,844 and is above the population limited PILT ceiling, Churchill County received the valuation of the Population Limited Formula A PILT payment less revenue sharing payments and 99.9 percent prorated adjustment. The proposed largest acreage reduction, 549,927 acres under Alternative 3, would reduce the non-ceiling Formula A PILT payment to $4,358,542 which is still above the population limited PILT ceiling of $2,300,638. Thus, Churchill County would experience no change in PILT payment due to the proposed acreage withdrawal.

In 2018, Pershing County had a population limited PILT ceiling of $1,113,203. Pershing County's non-ceiling Formula A PILT was valued at $7,791,067 but was above the population limited PILT ceiling. Thus, Pershing County received the Population Limited Formula A PILT payment less revenue sharing payments and 99.9 percent prorated adjustment. The proposed acreage withdrawal under Alternatives 1, 2, and 3 of 21,655 would result in a non-ceiling Formula A PILT valuation of $7,851,420 that is still above the population limited ceiling. Thus, Pershing County would experience no change in PILT payment due to the proposed acreage withdrawal.

In 2018, Mineral County had a population limited PILT ceiling of $781,640. Mineral County's non-ceiling Formula A PILT was valued at $5,248,094 but was above the population limited PILT ceiling. Thus, Mineral County received the Population Limited Formula A PILT payment less revenue sharing payments and 99.9 percent prorated adjustment. The proposed largest acreage withdrawal, 89,099 acres under Alternative 3, would result in a non-ceiling Formula A PILT valuation of $5,006,636 that is still above the population limited ceiling. Thus,

Mineral County would experience no change in PILT payment due to the proposed acreage withdrawal.

In 2018, Nye County had a population limited PILT ceiling of $3,329,383. Nye County's non-ceiling Formula A PILT was valued at $23,166,169 which was above the population limited PILT ceiling. Thus, Nye County received the Population Limited Formula A PILT payment less revenue sharing payments and 99.9 percent prorated adjustment. The proposed largest acreage withdrawal, 84,719 acres under Alternative 3, would reduce non-ceiling Formula A payment to $22,936,581 which would result in a non-ceiling Formula A PILT valuation that is still above the population limited PILT ceiling of $3,329,282. Thus, Nye County would experience no change in PILT payment due to the proposed acreage withdrawal.

Lyon County followed non-ceiling Formula A, non-ceiling Alternative B, and non-ceiling Alternative B plans, respectively. This means that their PILT payment valuation is calculated based on acreage not on population. Thus, Lyon County would experience changes to their PILT payments due to the proposed acreage withdrawal. Tables A-4 and A-5 show impacts to county level PILT Payments from Alternatives 1, 2, and 3.

Table A-4. Estimated Reductions in 2018 PILT at County Level for Alternatives 1 and 2

Categories	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Acreage Proposed for Withdrawal Under Alternatives 1 and 2	544,902	4,073	84,659	30,177	21,641
2018 PILT Payments ($)	$2,298,812	$2,313,628	$781,024	$3,326,751	$1,112,319
Estimated Reductions in PILT Payments ($)	$0	$11,038	$0	$ 0	$0
Percentage Reductions (Based on 2018 PILT)	0.00%	0.48%	0.00%	0.00%	0.00%

Table A-5. Estimated Reductions in 2018 PILT at County Level for Alternative 3

Categories	Churchill County	Lyon County	Mineral County	Nye County	Pershing County
Acreage Proposed for Withdrawal Under Alternatives 3	549,927	4,073	89,099	84,719	21,641
2018 PILT Payments ($)	$2,298,812	$2,313,628	$781,024	$3,326,751	$1,112,319
Estimated Reductions in PILT Payments ($)	$0	$11,038	$0	$0	$0
Percentage Reductions (Based on 2018 PILT)	0.00%	0.48%	0.00%	0.00%	0.00%

APPENDIX B: SECTORAL VALUE OF OUTPUT FOR CHURCHILL, MINERAL, NYE, PERSHING, LYON, LANDER, and EUREKA COUNTIES

Table B-1. Economic Sectoral Value of Output, Percentage of Total, and Rank for Churchill County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Dry, condensed, and evaporated dairy product manufacturing	$122,847,198	6.97%	1
Employment and payroll of federal government, military	$121,670,303	6.90%	2
Secondary processing of other nonferrous metals	$109,368,401	6.20%	3
Scenic and sightseeing transportation and support activities for transportation	$84,844,528	4.81%	4
Fabricated structural metal manufacturing	$78,709,747	4.47%	5
Dairy cattle and milk production	$64,910,957	3.68%	6
Employment and payroll of federal government, non-military	$57,753,010	3.28%	7
Hospitals	$55,386,711	3.14%	8
Maintenance and repair construction of nonresidential structures	$55,004,940	3.12%	9
Electric power generation - Geothermal	$54,523,087	3.09%	10
Gambling industries (except casino hotels)	$50,279,640	2.85%	11
Ground or treated mineral and earth manufacturing	$43,089,169	2.44%	12
Employment and payroll of local government, non-education	$40,277,401	2.29%	13
Retail - General merchandise stores	$37,289,520	2.12%	14
All other crop farming	$36,716,042	2.08%	15
Facilities support services	$35,770,351	2.03%	16
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$35,619,007	2.02%	17
Wholesale trade	$34,841,179	1.98%	18
Limited-service restaurants	$34,689,919	1.97%	19
Elementary and secondary schools	$34,164,558	1.94%	20
Other federal government enterprises	$32,244,831	1.83%	21
Electric power transmission and distribution	$30,145,140	1.71%	22
Water, sewage and other systems	$29,264,259	1.66%	23
Monetary authorities and depository credit intermediation	$26,871,170	1.52%	24
Wired telecommunications carriers	$25,915,541	1.47%	25
Retail - Gasoline stores	$25,835,690	1.47%	26
Offices of physicians	$24,575,451	1.39%	27
Data processing, hosting, and related services	$20,187,401	1.15%	28
Retail - Motor vehicle and parts dealers	$19,430,170	1.10%	29
Retail - Building material and garden equipment and supplies stores	$16,511,881	0.94%	30
Employment and payroll of state government, non-education	$12,796,500	0.73%	31
Nursing and community care facilities	$11,954,460	0.68%	32
Retail - Food and beverage stores	$11,607,310	0.66%	33

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Construction of new power and communication structures	$11,344,000	0.64%	34
Other local government enterprises	$10,387,330	0.59%	35
Truck transportation	$9,637,927	0.55%	36
Hotels and motels, including casino hotels	$8,981,670	0.51%	37
Full-service restaurants	$8,911,815	0.51%	38
Ready-mix concrete manufacturing	$8,833,290	0.50%	39
Offices of dentists	$8,232,997	0.47%	40
Architectural, engineering, and related services	$8,053,018	0.46%	41
Automotive repair and maintenance, except car washes	$8,028,145	0.46%	42
Maintenance and repair construction of residential structures	$7,876,754	0.45%	43
Animal production, except cattle and poultry and eggs	$7,525,778	0.43%	44
Insurance agencies, brokerages, and related activities	$7,127,043	0.40%	45
Commercial and industrial machinery and equipment rental and leasing	$6,983,689	0.40%	46
Sign manufacturing	$6,815,066	0.39%	47
Real estate	$6,018,092	0.34%	48
Offices of other health practitioners	$5,938,726	0.34%	49
Waste management and remediation services	$5,915,351	0.34%	50
Construction of new educational and vocational structures	$5,749,149	0.33%	51
Non-depository credit intermediation and related activities	$5,475,703	0.31%	52
Construction of new health care structures	$5,013,715	0.28%	53
Outpatient care centers	$4,944,668	0.28%	54
Construction of other new nonresidential structures	$4,777,312	0.27%	55
Veterinary services	$4,753,333	0.27%	56
Support activities for agriculture and forestry	$4,315,937	0.24%	57
Employment services	$4,228,498	0.24%	58
Construction of new commercial structures, including farm structures	$4,221,785	0.24%	59
Poultry and egg production	$4,152,574	0.24%	60
Individual and family services	$4,131,336	0.23%	61
Retail - Miscellaneous store retailers	$3,856,522	0.22%	62
Retail - Health and personal care stores	$3,765,481	0.21%	63
Metal mining services	$3,384,615	0.19%	64
Sporting and athletic goods manufacturing	$3,270,537	0.19%	65
All other food and drinking places	$3,032,932	0.17%	66
Residential mental retardation, mental health, substance abuse and other facilities	$2,899,728	0.16%	67
Construction of new single-family residential structures	$2,839,876	0.16%	68
General and consumer goods rental except video tapes and discs	$2,746,327	0.16%	69
Retail - Electronics and appliance stores	$2,526,641	0.14%	70

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Postal service	$2,449,614	0.14%	71
Legal services	$2,370,572	0.13%	72
Scientific research and development services	$2,303,244	0.13%	73
Retail - Furniture and home furnishings stores	$2,284,291	0.13%	74
Computer systems design services	$2,270,804	0.13%	75
Car washes	$2,208,364	0.13%	76
Couriers and messengers	$2,137,501	0.12%	77
Construction of other new residential structures	$2,117,254	0.12%	78
Commercial hunting and trapping	$2,044,026	0.12%	79
Museums, historical sites, zoos, and parks	$1,966,523	0.11%	80
Labor and civic organizations	$1,953,515	0.11%	81
Retail - Sporting goods, hobby, musical instrument and book stores	$1,898,749	0.11%	82
Accounting, tax preparation, bookkeeping, and payroll services	$1,825,372	0.10%	83
Advertising, public relations, and related services	$1,802,314	0.10%	84
Vegetable and melon farming	$1,698,093	0.10%	85
Other chemical and fertilizer mineral mining	$1,676,285	0.10%	86
Motion picture and video industries	$1,543,604	0.09%	87
Grain farming	$1,528,193	0.09%	88
Other support services	$1,476,028	0.08%	89
Fitness and recreational sports centers	$1,443,636	0.08%	90
Custom computer programming services	$1,373,535	0.08%	91
Home health care services	$1,253,196	0.07%	92
Community food, housing, and other relief services, including rehabilitation services	$1,252,515	0.07%	93
Search, detection, and navigation instruments manufacturing	$1,154,227	0.07%	94
Services to buildings	$1,111,769	0.06%	95
Grant-making, giving, and social advocacy organizations	$1,101,549	0.06%	96
Retail - Clothing and clothing accessories stores	$1,088,019	0.06%	97
Ornamental and architectural metal work manufacturing	$1,028,684	0.06%	98
Other accommodations	$1,008,398	0.06%	99
Business and professional associations	$1,004,578	0.06%	100
Automotive equipment rental and leasing	$985,371	0.06%	101
Private households	$956,149	0.05%	102
Newspaper publishers	$945,574	0.05%	103
Other personal services	$900,962	0.05%	104
Transit and ground passenger transportation	$878,318	0.05%	105
Fruit farming	$869,364	0.05%	106
Aircraft manufacturing	$867,661	0.05%	107
Retail - Non-store retailers	$863,560	0.05%	108
Junior colleges, colleges, universities, and professional schools	$841,698	0.05%	109
Other amusement and recreation industries	$826,838	0.05%	110
Landscape and horticultural services	$824,957	0.05%	111

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Support activities for oil and gas operations	$776,371	0.04%	112
Dry-cleaning and laundry services	$747,622	0.04%	113
Animal, except poultry, slaughtering	$742,200	0.04%	114
Commercial and industrial machinery and equipment repair and maintenance	$680,634	0.04%	115
Business support services	$581,355	0.03%	116
Other leather and allied product manufacturing	$554,882	0.03%	117
Construction of new highways and streets	$548,110	0.03%	118
Maintenance and repair construction of highways, streets, bridges, and tunnels	$492,435	0.03%	119
Printing	$441,884	0.03%	120
Death care services	$425,839	0.02%	121
Radio and television broadcasting	$350,570	0.02%	122
Wood kitchen cabinet and countertop manufacturing	$340,352	0.02%	123
Marketing research and all other miscellaneous professional, scientific, and technical services	$326,680	0.02%	124
Other educational services	$310,554	0.02%	125
Optical instrument and lens manufacturing	$310,424	0.02%	126
Commercial logging	$306,412	0.02%	127
Other computer related services, including facilities management	$300,370	0.02%	128
Personal care services	$263,506	0.01%	129
Child day care services	$258,441	0.01%	130
Construction of new manufacturing structures	$251,488	0.01%	131
Management of companies and enterprises	$249,782	0.01%	132
Securities and commodity contracts intermediation and brokerage	$247,915	0.01%	133
Bowling centers	$247,565	0.01%	134
Office administrative services	$207,323	0.01%	135
Greenhouse, nursery, and floriculture production	$175,448	0.01%	136
Photographic services	$128,518	0.01%	137
Environmental and other technical consulting services	$118,058	0.01%	138
Other financial investment activities	$109,846	0.01%	139
Personal and household goods repair and maintenance	$101,823	0.01%	140
Management consulting services	$82,882	0.00%	141
Tree nut farming	$39,092	0.00%	142
TOTAL	$1,762,646,116	100.00%	

Table B-2. Economic Sectoral Value of Output, Percentage of Total, and Rank for Mineral County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Gold ore mining	$56,810,020	20.20%	1
Facilities support services	$43,769,073	15.57%	2
Hospitals	$30,454,590	10.83%	3
Employment and payroll of local government, non-education	$18,990,061	6.75%	4
Monetary authorities and depository credit intermediation	$13,433,950	4.78%	5
Employment and payroll of federal government, non-military	$11,393,730	4.05%	6
Hotels and motels, including casino hotels	$9,417,633	3.35%	7
Other local government enterprises	$8,555,443	3.04%	8
Electric power transmission and distribution	$6,972,100	2.48%	9
Limited-service restaurants	$6,272,063	2.23%	10
Elementary and secondary schools	$5,994,609	2.13%	11
Offices of physicians	$4,682,921	1.67%	12
Retail - Food and beverage stores	$4,527,700	1.61%	13
Water, sewage and other systems	$4,097,913	1.46%	14
Wired telecommunications carriers	$4,095,960	1.46%	15
Retail - Gasoline stores	$4,012,903	1.43%	16
Metal mining services	$3,142,791	1.12%	17
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$3,131,500	1.11%	18
Electric power generation - Geothermal	$3,060,871	1.09%	19
Offices of dentists	$2,949,144	1.05%	20
Retail – Non-store retailers	$2,552,414	0.91%	21
Maintenance and repair construction of residential structures	$2,371,891	0.84%	22
Maintenance and repair construction of highways, streets, bridges, and tunnels	$2,243,938	0.80%	23
Maintenance and repair construction of nonresidential structures	$2,007,733	0.71%	24
Construction of other new nonresidential structures	$2,001,863	0.71%	25
Wholesale trade	$1,894,610	0.67%	26
Newspaper publishers	$1,864,486	0.66%	27
Retail - General merchandise stores	$1,660,336	0.59%	28
Retail - Building material and garden equipment and supplies stores	$1,653,883	0.59%	29
Real estate	$1,485,601	0.53%	30
Architectural, engineering, and related services	$1,388,108	0.49%	31
All other food and drinking places	$1,366,158	0.49%	32
Employment and payroll of federal government, military	$1,228,324	0.44%	33
Employment and payroll of state government, non-education	$1,218,339	0.43%	34
All other crop farming	$1,121,378	0.40%	35
Individual and family services	$1,082,651	0.39%	36

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Other educational services	$1,056,114	0.38%	37
Gambling industries (except casino hotels)	$768,258	0.27%	38
Postal service	$731,921	0.26%	39
Full-service restaurants	$657,304	0.23%	40
Ready-mix concrete manufacturing	$531,243	0.19%	41
Automotive repair and maintenance, except car washes	$531,152	0.19%	42
Retail - Motor vehicle and parts dealers	$518,833	0.18%	43
Offices of other health practitioners	$511,744	0.18%	44
Personal care services	$507,964	0.18%	45
Greenhouse, nursery, and floriculture production	$426,942	0.15%	46
Other accommodations	$381,780	0.14%	47
Truck transportation	$292,628	0.10%	48
Accounting, tax preparation, bookkeeping, and payroll services	$282,090	0.10%	49
Child day care services	$248,328	0.09%	50
Management of companies and enterprises	$190,734	0.07%	51
Marketing research and all other miscellaneous professional, scientific, and technical services	$145,653	0.05%	52
Landscape and horticultural services	$123,835	0.04%	53
Environmental and other technical consulting services	$120,457	0.04%	54
Animal production, except cattle and poultry and eggs	$103,671	0.04%	55
Poultry and egg production	$74,514	0.03%	56
Retail - Miscellaneous store retailers	$43,619	0.02%	57
Commercial hunting and trapping	$33,596	0.01%	58
TOTAL	$281,189,068	100.00%	

Table B-3. Economic Sectoral Value of Output, Percentage of Total, and Rank for Nye County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Gold ore mining	$742,452,698	24.73%	1
Scientific research and development services	$445,175,018	14.83%	2
Petroleum refineries	$212,359,299	7.07%	3
Electric power transmission and distribution	$210,823,303	7.02%	4
Hotels and motels, including casino hotels	$81,874,954	2.73%	5
Facilities support services	$80,330,391	2.68%	6
Gambling industries (except casino hotels)	$63,131,001	2.10%	7
Maintenance and repair construction of nonresidential structures	$62,964,260	2.10%	8
Employment and payroll of local government, non-education	$62,787,086	2.09%	9
Elementary and secondary schools	$61,478,447	2.05%	10
Other clay, ceramic, refractory minerals mining	$47,112,320	1.57%	11
Hospitals	$46,538,540	1.55%	12
Dairy cattle and milk production	$42,745,602	1.42%	13
Retail - General merchandise stores	$42,676,620	1.42%	14
Waste management and remediation services	$36,906,754	1.23%	15
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$33,799,900	1.13%	16
Offices of physicians	$32,226,521	1.07%	17
Limited-service restaurants	$32,107,910	1.07%	18
Retail - Motor vehicle and parts dealers	$31,105,700	1.04%	19
Retail - Food and beverage stores	$28,082,680	0.94%	20
Monetary authorities and depository credit intermediation	$26,621,759	0.89%	21
Investigation and security services	$26,433,990	0.88%	22
Internet publishing and broadcasting and web search portals	$24,399,981	0.81%	23
Wholesale trade	$21,827,080	0.73%	24
Owner-occupied dwellings	$20,412,081	0.68%	25
Retail - Gasoline stores	$19,284,241	0.64%	26
Full-service restaurants	$19,044,889	0.63%	27
Retail - Building material and garden equipment and supplies stores	$17,655,590	0.59%	28
Employment and payroll of state government, non-education	$17,386,360	0.58%	29
Other amusement and recreation industries	$16,458,500	0.55%	30
Other local government enterprises	$14,120,750	0.47%	31
Architectural, engineering, and related services	$13,070,570	0.44%	32
Water, sewage and other systems	$13,040,460	0.43%	33
Commercial and industrial machinery and equipment repair and maintenance	$11,965,250	0.40%	34
All other crop farming	$11,884,960	0.40%	35
Wired telecommunications carriers	$11,488,740	0.38%	36
Real estate	$10,933,300	0.36%	37

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Employment and payroll of federal government, non-military	$10,834,670	0.36%	38
Nursing and community care facilities	$10,273,310	0.34%	39
Postal service	$9,132,935	0.30%	40
Construction of new highways and streets	$9,005,395	0.30%	41
Retail - Miscellaneous store retailers	$8,991,574	0.30%	42
Insurance agencies, brokerages, and related activities	$8,824,358	0.29%	43
Other educational services	$8,658,418	0.29%	44
Offices of dentists	$8,500,240	0.28%	45
All other food and drinking places	$8,301,161	0.28%	46
Retail – Non-store retailers	$8,295,265	0.28%	47
Maintenance and repair construction of highways, streets, bridges, and tunnels	$8,078,815	0.27%	48
Employment and payroll of federal government, military	$7,593,883	0.25%	49
Construction of new single-family residential structures	$7,358,112	0.25%	50
Automotive repair and maintenance, except car washes	$7,048,517	0.23%	51
Performing arts companies	$6,727,865	0.22%	52
Offices of other health practitioners	$6,469,351	0.22%	53
Wireless telecommunications carriers (except satellite)	$6,380,047	0.21%	54
Transit and ground passenger transportation	$6,176,681	0.21%	55
Grant-making, giving, and social advocacy organizations	$5,933,181	0.20%	56
Construction of new power and communication structures	$5,538,539	0.18%	57
Retail - Health and personal care stores	$5,190,622	0.17%	58
Custom roll forming	$5,041,255	0.17%	59
Truck transportation	$5,025,840	0.17%	60
Ready-mix concrete manufacturing	$4,430,315	0.15%	61
Construction of other new nonresidential structures	$4,247,587	0.14%	62
Coffee and tea manufacturing	$4,123,271	0.14%	63
Individual and family services	$3,998,820	0.13%	64
Commercial and industrial machinery and equipment rental and leasing	$3,839,321	0.13%	65
Sign manufacturing	$3,801,935	0.13%	66
Stone mining and quarrying	$3,610,932	0.12%	67
Custom computer programming services	$3,488,005	0.12%	68
Management of companies and enterprises	$3,451,979	0.11%	69
Other rubber product manufacturing	$3,340,593	0.11%	70
Construction of new manufacturing structures	$3,326,608	0.11%	71
Secondary processing of other nonferrous metals	$3,254,132	0.11%	72
Veterinary services	$3,205,107	0.11%	73
Other accommodations	$3,172,665	0.11%	74

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Community food, housing, and other relief services, including rehabilitation services	$2,946,997	0.10%	75
Radio and television broadcasting	$2,893,559	0.10%	76
Labor and civic organizations	$2,818,753	0.09%	77
Scenic and sightseeing transportation and support activities for transportation	$2,798,261	0.09%	78
Outpatient care centers	$2,691,289	0.09%	79
Retail - Sporting goods, hobby, musical instrument and book stores	$2,555,470	0.09%	80
Support activities for agriculture and forestry	$2,544,252	0.08%	81
Legal services	$2,510,474	0.08%	82
Construction of new educational and vocational structures	$2,501,223	0.08%	83
Non-depository credit intermediation and related activities	$2,389,815	0.08%	84
All other miscellaneous manufacturing	$2,230,854	0.07%	85
Construction of new health care structures	$2,120,870	0.07%	86
Other nonmetallic minerals	$2,007,717	0.07%	87
Poultry and egg production	$1,959,973	0.07%	88
Death care services	$1,836,930	0.06%	89
Other ambulatory health care services	$1,807,746	0.06%	90
Automotive equipment rental and leasing	$1,721,071	0.06%	91
Construction of new commercial structures, including farm structures	$1,719,019	0.06%	92
Other textile product mills	$1,713,231	0.06%	93
Spring and wire product manufacturing	$1,695,242	0.06%	94
Environmental and other technical consulting services	$1,663,501	0.06%	95
Greenhouse, nursery, and floriculture production	$1,589,232	0.05%	96
Retail - Electronics and appliance stores	$1,518,250	0.05%	97
Fitness and recreational sports centers	$1,496,020	0.05%	98
Accounting, tax preparation, bookkeeping, and payroll services	$1,390,856	0.05%	99
Landscape and horticultural services	$1,371,298	0.05%	100
Surgical appliance and supplies manufacturing	$1,357,865	0.05%	101
Cut stone and stone product manufacturing	$1,215,415	0.04%	102
Retail - Furniture and home furnishings stores	$1,170,717	0.04%	103
Home health care services	$1,155,201	0.04%	104
Fluid milk manufacturing	$1,152,197	0.04%	105
General and consumer goods rental except video tapes and discs	$1,105,392	0.04%	106
Video tape and disc rental	$1,102,330	0.04%	107
Services to buildings	$1,077,744	0.04%	108
Car washes	$1,074,842	0.04%	109
Machine shops	$1,053,656	0.04%	110
Insurance carriers	$1,046,329	0.03%	111
Sheet metal work manufacturing	$1,011,101	0.03%	112
Commercial hunting and trapping	$880,541	0.03%	113

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Medical and diagnostic laboratories	$866,317	0.03%	114
Business and professional associations	$864,795	0.03%	115
Personal care services	$854,536	0.03%	116
Periodical publishers	$784,455	0.03%	117
Museums, historical sites, zoos, and parks	$736,856	0.02%	118
Construction of other new residential structures	$707,954	0.02%	119
Maintenance and repair construction of residential structures	$651,852	0.02%	120
Other personal services	$630,928	0.02%	121
Drilling oil and gas wells	$594,550	0.02%	122
Animal production, except cattle and poultry and eggs	$570,607	0.02%	123
Management consulting services	$546,257	0.02%	124
Tree nut farming	$517,364	0.02%	125
Couriers and messengers	$513,657	0.02%	126
Support activities for oil and gas operations	$494,001	0.02%	127
Retail - Clothing and clothing accessories stores	$432,895	0.01%	128
Computer systems design services	$422,548	0.01%	129
Personal and household goods repair and maintenance	$402,195	0.01%	130
Metal mining services	$391,871	0.01%	131
Fruit farming	$375,888	0.01%	132
Business support services	$374,107	0.01%	133
Other support services	$357,469	0.01%	134
Employment services	$354,538	0.01%	135
Specialized design services	$333,743	0.01%	136
Commercial logging	$294,872	0.01%	137
Office administrative services	$288,978	0.01%	138
Other nonmetallic minerals services	$282,973	0.01%	139
Independent artists, writers, and performers	$264,294	0.01%	140
Private households	$249,585	0.01%	141
Prefabricated metal buildings and components manufacturing	$248,936	0.01%	142
Commercial Sports Except Racing	$222,472	0.01%	143
Other computer related services, including facilities management	$206,512	0.01%	144
Printing	$181,331	0.01%	145
Electronic and precision equipment repair and maintenance	$180,159	0.01%	146
Securities and commodity contracts intermediation and brokerage	$179,206	0.01%	147
Extraction of natural gas and crude petroleum	$158,507	0.01%	148
Marketing research and all other miscellaneous professional, scientific, and technical services	$113,315	0.00%	149
Child day care services	$111,003	0.00%	150
Manufactured ice	$74,628	0.00%	151
Software publishers	$6,943	0.00%	152

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Bowling centers	$1,471	0.00%	153
TOTAL	$3,002,118,610	100.00%	

Table B-4. Economic Sectoral Value of Output, Percentage of Total, and Rank for Pershing County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Soybean and other oilseed processing	$125,218,399	28.84%	1
Gold ore mining	$61,315,472	14.12%	2
Other nonmetallic minerals	$50,116,199	11.54%	3
Silver ore mining	$35,448,368	8.16%	4
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$26,543,520	6.11%	5
Employment and payroll of state government, non-education	$15,974,510	3.68%	6
Dairy cattle and milk production	$12,108,440	2.79%	7
All other crop farming	$11,641,830	2.68%	8
Employment and payroll of local government, non-education	$9,966,880	2.30%	9
Retail - Gasoline stores	$9,167,099	2.11%	10
Pipeline transportation	$7,947,712	1.83%	11
Elementary and secondary schools	$7,828,148	1.80%	12
Limited-service restaurants	$7,816,601	1.80%	13
Hospitals	$6,172,518	1.42%	14
Monetary authorities and depository credit intermediation	$4,803,406	1.11%	15
Hotels and motels, including casino hotels	$4,631,459	1.07%	16
Truck transportation	$2,523,729	0.58%	17
Grain farming	$2,391,021	0.55%	18
Other miscellaneous chemical product manufacturing	$2,298,344	0.53%	19
Retail - Food and beverage stores	$2,075,136	0.48%	20
Wood container and pallet manufacturing	$2,043,586	0.47%	21
Other chemical and fertilizer mineral mining	$1,947,294	0.45%	22
Animal production, except cattle and poultry and eggs	$1,739,535	0.40%	23
Other local government enterprises	$1,489,639	0.34%	24
Retail - Motor vehicle and parts dealers	$1,482,613	0.34%	25
Commercial and industrial machinery and equipment repair and maintenance	$1,408,126	0.32%	26
Gambling industries (except casino hotels)	$1,305,579	0.30%	27
Employment and payroll of federal government, non-military	$1,076,036	0.25%	28
Retail - Building material and garden equipment and supplies stores	$1,011,023	0.23%	29
Wholesale trade	$933,958	0.22%	30
Grant-making, giving, and social advocacy organizations	$929,452	0.21%	31
Nursing and community care facilities	$881,338	0.20%	32
Real estate	$879,404	0.20%	33
Water, sewage and other systems	$857,816	0.20%	34
Offices of dentists	$844,350	0.19%	35
Legal services	$753,324	0.17%	36
Postal service	$742,890	0.17%	37

Labor and civic organizations	$713,447	0.16%	38
Retail - Health and personal care stores	$673,779	0.16%	39
Employment and payroll of federal government, military	$629,592	0.15%	40
Retail - General merchandise stores	$628,587	0.14%	41
Transit and ground passenger transportation	$579,911	0.13%	42
Ready-mix concrete manufacturing	$575,739	0.13%	43
Computer systems design services	$571,914	0.13%	44
Full-service restaurants	$542,048	0.12%	45
Child day care services	$395,600	0.09%	46
Non-depository credit intermediation and related activities	$366,887	0.08%	47
All other food and drinking places	$300,526	0.07%	48
Greenhouse, nursery, and floriculture production	$289,556	0.07%	49
Warehousing and storage	$234,208	0.05%	50
Business and professional associations	$202,875	0.05%	51
Insurance agencies, brokerages, and related activities	$195,838	0.05%	52
Machine shops	$165,122	0.04%	53
Museums, historical sites, zoos, and parks	$156,544	0.04%	54
Retail - Miscellaneous store retailers	$155,925	0.04%	55
Accounting, tax preparation, bookkeeping, and payroll services	$148,995	0.03%	56
Poultry and egg production	$141,619	0.03%	57
Other support services	$89,656	0.02%	58
Fruit farming	$35,757	0.01%	59
Individual and family services	$27,493	0.01%	60
Local government passenger transit	$22,934	0.01%	61
Support activities for agriculture and forestry	$18,770	0.00%	62
Other educational services	$10,127	0.00%	63
TOTAL	$434,188,203	100.00%	

Table B-5. Economic Sectoral Value of Output, Percentage of Total, and Rank for Lyon County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Owner-occupied dwellings	$185,086,029	6.63%	1
Jewelry and silverware manufacturing	$89,823,364	3.22%	2
Gambling industries (except casino hotels)	$88,229,279	3.16%	3
Paint and coating manufacturing	$87,412,743	3.13%	4
Employment and payroll of local government, education	$84,949,577	3.04%	5
Real estate	$74,932,854	2.68%	6
Asphalt shingle and coating materials manufacturing	$70,559,036	2.53%	7
Warehousing and storage	$61,984,222	2.22%	8
Wholesale trade	$61,741,203	2.21%	9
Cement manufacturing	$60,683,449	2.17%	10
Automobile manufacturing	$58,171,486	2.08%	11
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$55,144,630	1.97%	12
Electric power generation - Fossil fuel	$46,539,906	1.67%	13
Employment and payroll of local government, non-education	$43,113,281	1.54%	14
Limited-service restaurants	$40,826,736	1.46%	15
Nonferrous metal foundries	$40,535,858	1.45%	16
Meat processed from carcasses	$40,515,041	1.45%	17
Truck transportation	$40,299,370	1.44%	18
Vegetable and melon farming	$38,750,038	1.39%	19
Fabricated structural metal manufacturing	$33,867,577	1.21%	20
Dairy cattle and milk production	$29,787,493	1.07%	21
Architectural, engineering, and related services	$29,484,455	1.06%	22
Gasket, packing, and sealing device manufacturing	$29,079,147	1.04%	23
All other crop farming	$28,846,008	1.03%	24
Metal mining services	$28,693,075	1.03%	25
Motorcycle, bicycle, and parts manufacturing	$28,094,280	1.01%	26
Motor vehicle electrical and electronic equipment manufacturing	$27,109,133	0.97%	27
Copper ore mining	$26,959,858	0.97%	28
Wood preservation	$26,837,379	0.96%	29
Construction of other new residential structures	$26,313,864	0.94%	30
Retail - General merchandise stores	$26,287,386	0.94%	31
Surgical appliance and supplies manufacturing	$25,272,228	0.90%	32
Retail – Non-store retailers	$23,921,642	0.86%	33
Other financial investment activities	$23,539,595	0.84%	34
Other nonmetallic minerals	$23,509,485	0.84%	35
Monetary authorities and depository credit intermediation	$23,310,347	0.83%	36
Waste management and remediation services	$23,166,891	0.83%	37
All other miscellaneous manufacturing	$22,401,484	0.80%	38
Secondary processing of other nonferrous metals	$22,387,459	0.80%	39

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Valve and fittings, other than plumbing, manufacturing	$22,354,328	0.80%	40
Non-depository credit intermediation and related activities	$21,740,688	0.78%	41
Sand and gravel mining	$21,684,849	0.78%	42
Other local government enterprises	$19,690,479	0.70%	43
Construction of other new nonresidential structures	$19,508,436	0.70%	44
Maintenance and repair construction of nonresidential structures	$19,226,154	0.69%	45
Retail - Gasoline stores	$18,711,700	0.67%	46
Wireless telecommunications carriers (except satellite)	$18,517,975	0.66%	47
Retail - Food and beverage stores	$17,894,178	0.64%	48
Plastics packaging materials and unlaminated film and sheet manufacturing	$17,684,525	0.63%	49
Pharmaceutical preparation manufacturing	$17,424,574	0.62%	50
Hospitals	$16,686,283	0.60%	51
Printing	$16,677,101	0.60%	52
Construction of new single-family residential structures	$16,340,017	0.58%	53
Metal tank (heavy gauge) manufacturing	$16,226,513	0.58%	54
Scientific research and development services	$16,211,899	0.58%	55
Construction of new power and communication structures	$16,002,991	0.57%	56
Retail - Building material and garden equipment and supplies stores	$15,805,780	0.57%	57
Gold ore mining	$15,753,167	0.56%	58
Construction machinery manufacturing	$14,762,211	0.53%	59
Machine shops	$14,328,753	0.51%	60
Ready-mix concrete manufacturing	$14,192,895	0.51%	61
Small arms ammunition manufacturing	$13,585,588	0.49%	62
Automotive repair and maintenance, except car washes	$12,048,973	0.43%	63
Fertilizer mixing	$11,631,794	0.42%	64
Paper bag and coated and treated paper manufacturing	$11,499,891	0.41%	65
Full-service restaurants	$11,448,787	0.41%	66
Retail - Motor vehicle and parts dealers	$10,771,558	0.39%	67
Turbine and turbine generator set units manufacturing	$10,412,226	0.37%	68
Silver ore mining	$10,323,270	0.37%	69
Natural gas distribution	$9,714,717	0.35%	70
Construction of new commercial structures, including farm structures	$9,600,667	0.34%	71
Landscape and horticultural services	$9,583,968	0.34%	72
Grant-making, giving, and social advocacy organizations	$9,379,236	0.34%	73
Metal heat treating	$9,118,208	0.33%	74
Turned product and screw, nut, and bolt manufacturing	$9,071,735	0.32%	75

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Mattress manufacturing	$9,010,580	0.32%	76
All other food and drinking places	$8,757,190	0.31%	77
Electric power generation - Geothermal	$8,533,504	0.31%	78
Insurance agencies, brokerages, and related activities	$8,474,326	0.30%	79
Maintenance and repair construction of residential structures	$8,278,325	0.30%	80
Offices of dentists	$8,254,181	0.30%	81
Funds, trusts, and other financial vehicles	$8,196,495	0.29%	82
Construction of new highways and streets	$8,094,747	0.29%	83
Commercial and industrial machinery and equipment rental and leasing	$7,970,598	0.29%	84
Management of companies and enterprises	$7,965,784	0.29%	85
Motor vehicle steering, suspension component (except spring), and brake systems manufacturing	$7,895,316	0.28%	86
Employment services	$7,860,655	0.28%	87
Ornamental and architectural metal work manufacturing	$7,824,868	0.28%	88
Reconstituted wood product manufacturing	$7,759,968	0.28%	89
Confectionery manufacturing from purchased chocolate	$7,735,520	0.28%	90
Personal care services	$7,173,654	0.26%	91
Employment and payroll of state government, non-education	$6,958,722	0.25%	92
Dehydrated food products manufacturing	$6,942,820	0.25%	93
Construction of new educational and vocational structures	$6,902,742	0.25%	94
Greenhouse, nursery, and floriculture production	$6,576,295	0.24%	95
Accounting, tax preparation, bookkeeping, and payroll services	$6,527,313	0.23%	96
Metal window and door manufacturing	$6,497,460	0.23%	97
Maintenance and repair construction of highways, streets, bridges, and tunnels	$6,481,776	0.23%	98
Construction of new manufacturing structures	$6,418,582	0.23%	99
Poultry and egg production	$6,337,675	0.23%	100
Engineered wood member and truss manufacturing	$6,246,367	0.22%	101
Air transportation	$6,226,975	0.22%	102
Retail - Health and personal care stores	$5,914,449	0.21%	103
Employment and payroll of federal government, military	$5,866,271	0.21%	104
Urethane and other foam product (except polystyrene) manufacturing	$5,801,638	0.21%	105
Car washes	$5,411,306	0.19%	106
Wired telecommunications carriers	$5,369,559	0.19%	107
Other fabricated metal manufacturing	$5,177,815	0.19%	108
Legal services	$5,054,471	0.18%	109
Offices of other health practitioners	$5,018,965	0.18%	110
Postal service	$5,012,857	0.18%	111
Other plastics product manufacturing	$4,983,542	0.18%	112

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Other personal services	$4,959,394	0.18%	113
Heating equipment (except warm air furnaces) manufacturing	$4,924,664	0.18%	114
Offices of physicians	$4,896,587	0.18%	115
Polish and other sanitation good manufacturing	$4,864,368	0.17%	116
Management consulting services	$4,850,003	0.17%	117
Custom computer programming services	$4,827,139	0.17%	118
Animal production, except cattle and poultry and eggs	$4,421,107	0.16%	119
Commercial and industrial machinery and equipment repair and maintenance	$4,336,263	0.16%	120
Retail - Miscellaneous store retailers	$4,312,994	0.15%	121
Construction of new multifamily residential structures	$4,305,471	0.15%	122
Marketing research and all other miscellaneous professional, scientific, and technical services	$4,285,934	0.15%	123
Other educational services	$4,174,017	0.15%	124
Couriers and messengers	$4,009,548	0.14%	125
Electricity and signal testing instruments manufacturing	$3,934,517	0.14%	126
Services to buildings	$3,923,115	0.14%	127
Scales, balances, and miscellaneous general purpose machinery manufacturing	$3,830,609	0.14%	128
Support activities for oil and gas operations	$3,700,238	0.13%	129
Prefabricated metal buildings and components manufacturing	$3,697,371	0.13%	130
Polystyrene foam product manufacturing	$3,689,675	0.13%	131
Veterinary services	$3,637,924	0.13%	132
Wood kitchen cabinet and countertop manufacturing	$3,611,750	0.13%	133
Scenic and sightseeing transportation and support activities for transportation	$3,607,318	0.13%	134
Hand-tool manufacturing	$3,495,196	0.13%	135
Packaging machinery manufacturing	$3,443,306	0.12%	136
Cheese manufacturing	$3,269,625	0.12%	137
Construction of new health care structures	$3,260,740	0.12%	138
Business support services	$3,244,118	0.12%	139
Advertising, public relations, and related services	$3,151,334	0.11%	140
Custom compounding of purchased resins	$3,113,596	0.11%	141
Child day care services	$3,104,467	0.11%	142
Hotels and motels, including casino hotels	$3,041,940	0.11%	143
Mining machinery and equipment manufacturing	$3,011,074	0.11%	144
Air purification and ventilation equipment manufacturing	$2,989,949	0.11%	145
Other clay, ceramic, refractory minerals mining	$2,957,266	0.11%	146
Personal and household goods repair and maintenance	$2,870,538	0.10%	147
Data processing, hosting, and related services	$2,832,566	0.10%	148
Residential mental retardation, mental health, substance abuse and other facilities	$2,832,044	0.10%	149
Support activities for agriculture and forestry	$2,617,969	0.09%	150

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Nursing and community care facilities	$2,536,903	0.09%	151
Outpatient care centers	$2,518,509	0.09%	152
Metal coating and nonprecious engraving	$2,490,000	0.09%	153
Other support services	$2,486,251	0.09%	154
Bread and bakery product, except frozen, manufacturing	$2,341,617	0.08%	155
Lessors of nonfinancial intangible assets	$2,124,770	0.08%	156
Water, sewage and other systems	$2,039,583	0.07%	157
Satellite, telecommunications resellers, and all other telecommunications	$2,036,106	0.07%	158
Transit and ground passenger transportation	$1,955,657	0.07%	159
Other amusement and recreation industries	$1,880,864	0.07%	160
Retail - Clothing and clothing accessories stores	$1,812,227	0.06%	161
Individual and family services	$1,806,851	0.06%	162
Broadcast and wireless communications equipment manufacturing	$1,680,434	0.06%	163
Employment and payroll of federal government, non-military	$1,663,131	0.06%	164
Business and professional associations	$1,619,705	0.06%	165
Custom architectural woodwork and millwork	$1,534,232	0.05%	166
General and consumer goods rental except video tapes and discs	$1,391,263	0.05%	167
Environmental and other technical consulting services	$1,361,641	0.05%	168
Internet publishing and broadcasting and web search portals	$1,346,779	0.05%	169
Fitness and recreational sports centers	$1,291,157	0.05%	170
Labor and civic organizations	$1,249,364	0.04%	171
Electronic and precision equipment repair and maintenance	$1,187,797	0.04%	172
Insurance carriers	$1,176,185	0.04%	173
Private households	$1,147,912	0.04%	174
Laminated plastics plate, sheet (except packaging), and shape manufacturing	$1,057,499	0.04%	175
Other animal food manufacturing	$1,050,552	0.04%	176
Commercial hunting and trapping	$1,030,468	0.04%	177
Home health care services	$1,017,314	0.04%	178
Other computer related services, including facilities management	$1,006,806	0.04%	179
Computer systems design services	$921,643	0.03%	180
Showcase, partition, shelving, and locker manufacturing	$919,788	0.03%	181
Racing and Track Operation	$888,458	0.03%	182
Grain farming	$861,913	0.03%	183
Retail - Furniture and home furnishings stores	$829,224	0.03%	184
Other accommodations	$738,560	0.03%	185
Retail - Sporting goods, hobby, musical instrument and book stores	$722,334	0.03%	186
Motion picture and video industries	$721,713	0.03%	187

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Travel arrangement and reservation services	$685,995	0.02%	188
Independent artists, writers, and performers	$667,532	0.02%	189
Other leather and allied product manufacturing	$659,185	0.02%	190
Video tape and disc rental	$628,742	0.02%	191
Bowling centers	$626,965	0.02%	192
Drilling oil and gas wells	$596,472	0.02%	193
Retail - Electronics and appliance stores	$545,836	0.02%	194
Cut stone and stone product manufacturing	$519,181	0.02%	195
Other textile product mills	$492,872	0.02%	196
Specialized design services	$450,129	0.02%	197
Photographic services	$358,777	0.01%	198
Electroplating, anodizing, and coloring metal	$266,304	0.01%	199
Death care services	$257,270	0.01%	200
Extraction of natural gas and crude petroleum	$241,626	0.01%	201
Fruit farming	$235,841	0.01%	202
Dry-cleaning and laundry services	$192,532	0.01%	203
Frozen cakes and other pastries manufacturing	$155,867	0.01%	204
Other nonmetallic minerals services	$67,670	0.00%	205
Cut and sew apparel contractors	$65,848	0.00%	206
Performing arts companies	$65,154	0.00%	207
Software publishers	$18,133	0.00%	208
Community food, housing, and other relief services, including rehabilitation services	$16,048	0.00%	209
Tree nut farming	$10,953	0.00%	210
Office administrative services	$3,186	0.00%	211
TOTAL	$2,793,605,384	100.00%	

Table B-6. Economic Sectoral Value of Output, Percentage of Total, and Rank for Lander County, Nevada, 2015

Economic Sector	Value of Output ($)	Percent of Total (%)	Rank
Gold ore mining	$853,160,461	71.06%	1
Construction of new power and communication structures	$36,134,010	3.01%	2
Support activities for oil and gas operations	$29,346,592	2.44%	3
Owner-occupied dwellings	$28,953,924	2.41%	4
Other chemical and fertilizer mineral mining	$23,590,839	1.96%	5
Truck transportation	$23,300,274	1.94%	6
Wholesale trade	$20,596,760	1.72%	7
Employment and payroll of local government, education	$17,607,920	1.47%	8
Employment and payroll of local government, non-education	$15,440,366	1.29%	9
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$9,227,900	0.77%	10
Other financial investment activities	$8,666,773	0.72%	11
Electric power generation - Geothermal	$8,079,201	0.67%	12
Employment and payroll of federal government, non-military	$7,427,206	0.62%	13
Commercial and industrial machinery and equipment repair and maintenance	$6,973,454	0.58%	14
All other crop farming	$6,958,216	0.58%	15
Retail - Gasoline stores	$6,092,673	0.51%	16
Gambling industries (except casino hotels)	$5,459,017	0.45%	17
Funds, trusts, and other financial vehicles	$5,062,274	0.42%	18
Real estate	$4,727,633	0.39%	19
Limited-service restaurants	$4,676,105	0.39%	20
Retail - Food and beverage stores	$4,561,550	0.38%	21
Other nonmetallic minerals services	$3,780,766	0.31%	22
Business and professional associations	$3,352,052	0.28%	23
Metal mining services	$3,321,778	0.28%	24
Grant-making, giving, and social advocacy organizations	$2,766,347	0.23%	25
Scientific research and development services	$2,747,984	0.23%	26
Other local government enterprises	$2,623,822	0.22%	27
Construction of other new residential structures	$2,520,996	0.21%	28
Retail – Non-store retailers	$2,319,119	0.19%	29
Retail - Motor vehicle and parts dealers	$2,074,265	0.17%	30
Monetary authorities and depository credit intermediation	$1,986,879	0.17%	31
Full-service restaurants	$1,838,088	0.15%	32
Lessors of nonfinancial intangible assets	$1,807,700	0.15%	33
Animal production, except cattle and poultry and eggs	$1,672,701	0.14%	34
Rail transportation	$1,383,896	0.12%	35
Extraction of natural gas and crude petroleum	$1,368,832	0.11%	36

Economic Sector	Value of Output ($)	Percent of Total (%)	Rank
Retail - Health and personal care stores	$1,342,942	0.11%	37
All other food and drinking places	$1,293,632	0.11%	38
Hotels and motels, including casino hotels	$1,259,052	0.10%	39
Scenic and sightseeing transportation and support activities for transportation	$1,252,754	0.10%	40
Employment and payroll of state government, non-education	$1,237,515	0.10%	41
Landscape and horticultural services	$1,191,867	0.10%	42
Maintenance and repair construction of nonresidential structures	$1,172,152	0.10%	43
Construction of other new nonresidential structures	$1,138,284	0.09%	44
Other support services	$1,106,262	0.09%	45
Construction of new single-family residential structures	$1,092,999	0.09%	46
Services to buildings	$1,087,927	0.09%	47
Electric power transmission and distribution	$1,050,634	0.09%	48
Personal care services	$981,567	0.08%	49
Independent artists, writers, and performers	$979,990	0.08%	50
Commercial and industrial machinery and equipment rental and leasing	$873,661	0.07%	51
Retail - Building material and garden equipment and supplies stores	$848,830	0.07%	52
Management consulting services	$847,678	0.07%	53
Offices of dentists	$844,873	0.07%	54
Personal and household goods repair and maintenance	$831,112	0.07%	55
Construction of new commercial structures, including farm structures	$762,825	0.06%	56
Automotive repair and maintenance, except car washes	$691,434	0.06%	57
Support activities for agriculture and forestry	$661,979	0.06%	58
Employment services	$605,303	0.05%	59
Bread and bakery product, except frozen, manufacturing	$586,390	0.05%	60
Employment and payroll of federal government, military	$578,715	0.05%	61
Retail - Sporting goods, hobby, musical instrument and book stores	$562,181	0.05%	62
Postal service	$559,119	0.05%	63
Construction of new highways and streets	$544,720	0.05%	64
Retail - General merchandise stores	$538,334	0.04%	65
Retail - Miscellaneous store retailers	$536,202	0.04%	66
Maintenance and repair construction of residential structures	$535,478	0.04%	67
Investigation and security services	$533,790	0.04%	68
Construction of new educational and vocational structures	$514,376	0.04%	69
Toilet preparation manufacturing	$503,102	0.04%	70
Legal services	$492,503	0.04%	71
Breweries	$438,848	0.04%	72

Economic Sector	Value of Output ($)	Percent of Total (%)	Rank
Insurance agencies, brokerages, and related activities	$434,757	0.04%	73
Transit and ground passenger transportation	$423,743	0.04%	74
Accounting, tax preparation, bookkeeping, and payroll services	$421,194	0.04%	75
Maintenance and repair construction of highways, streets, bridges, and tunnels	$398,260	0.03%	76
Warehousing and storage	$377,912	0.03%	77
Waste management and remediation services	$367,111	0.03%	78
Other educational services	$349,523	0.03%	79
Construction of new multifamily residential structures	$339,608	0.03%	80
Custom computer programming services	$334,328	0.03%	81
Construction of new manufacturing structures	$330,675	0.03%	82
Vegetable and melon farming	$327,368	0.03%	83
Ready-mix concrete manufacturing	$324,723	0.03%	84
Software publishers	$311,728	0.03%	85
Other accommodations	$309,546	0.03%	86
Drilling oil and gas wells	$274,952	0.02%	87
Child day care services	$267,529	0.02%	88
Travel arrangement and reservation services	$265,593	0.02%	89
Retail - Furniture and home furnishings stores	$248,928	0.02%	90
Offices of other health practitioners	$240,695	0.02%	91
Poultry and egg production	$240,211	0.02%	92
Retail - Clothing and clothing accessories stores	$219,188	0.02%	93
Construction of new health care structures	$215,739	0.02%	94
Electronic and precision equipment repair and maintenance	$198,605	0.02%	95
Other plastics product manufacturing	$191,792	0.02%	96
Retail - Electronics and appliance stores	$150,138	0.01%	97
Printing	$148,098	0.01%	98
Individual and family services	$145,480	0.01%	99
Machine shops	$139,428	0.01%	100
Wood container and pallet manufacturing	$130,085	0.01%	101
Wood kitchen cabinet and countertop manufacturing	$126,435	0.01%	102
Sign manufacturing	$123,588	0.01%	103
Nursing and community care facilities	$101,275	0.01%	104
Grain farming	$75,063	0.01%	105
General and consumer goods rental except video tapes and discs	$73,039	0.01%	106
Advertising, public relations, and related services	$64,984	0.01%	107
Hospitals	$64,501	0.01%	108
Fitness and recreational sports centers	$49,482	0.00%	109
Non-depository credit intermediation and related activities	$47,339	0.00%	110
Car washes	$43,587	0.00%	111
Frozen cakes and other pastries manufacturing	$36,538	0.00%	112
Performing arts companies	$25,797	0.00%	113
Cut and sew apparel contractors	$22,211	0.00%	114

Economic Sector	Value of Output ($)	Percent of Total (%)	Rank
Computer systems design services	$5,413	0.00%	115
TOTAL	$1,200,673,593	100.00%	

Table B-7. Economic Sectoral Value of Output, Percentage of Total, and Rank for Eureka County, Nevada, 2015

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Gold ore mining	$1,853,471,924	76.49%	1
Electric power generation - Fossil fuel	$97,853,157	4.04%	2
Construction of new power and communication structures	$77,448,631	3.20%	3
Support activities for oil and gas operations	$66,849,197	2.76%	4
Wholesale trade	$27,054,312	1.12%	5
Other nonmetallic minerals	$25,235,571	1.04%	6
All other crop farming	$17,043,228	0.70%	7
Metal mining services	$16,837,225	0.69%	8
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	$16,373,398	0.68%	9
Architectural, engineering, and related services	$14,962,420	0.62%	10
Construction of other new nonresidential structures	$14,827,560	0.61%	11
Maintenance and repair construction of nonresidential structures	$13,661,930	0.56%	12
Toilet preparation manufacturing	$12,969,357	0.54%	13
Construction of new single-family residential structures	$12,167,156	0.50%	14
Electric power generation - Geothermal	$12,153,608	0.50%	15
Employment and payroll of local government, education	$11,525,914	0.48%	16
Monetary authorities and depository credit intermediation	$11,344,830	0.47%	17
Truck transportation	$10,603,721	0.44%	18
Owner-occupied dwellings	$9,852,971	0.41%	19
Real estate	$8,421,803	0.35%	20
Construction of new commercial structures, including farm structures	$7,570,722	0.31%	21
Maintenance and repair construction of residential structures	$5,953,332	0.25%	22
Construction of new highways and streets	$5,913,391	0.24%	23
Construction of other new residential structures	$5,860,258	0.24%	24
Offices of physicians	$5,181,551	0.21%	25
Construction of new manufacturing structures	$4,848,195	0.20%	26
Employment and payroll of local government, non-education	$4,791,808	0.20%	27
Electric power transmission and distribution	$4,712,145	0.19%	28
Maintenance and repair construction of highways, streets, bridges, and tunnels	$4,605,891	0.19%	29
Construction of new educational and vocational structures	$4,263,302	0.18%	30
Commercial and industrial machinery and equipment repair and maintenance	$3,048,898	0.13%	31
Construction of new multifamily residential structures	$3,045,800	0.13%	32
Construction of new health care structures	$2,384,506	0.10%	33
Other nonmetallic minerals services	$2,324,288	0.10%	34

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Uranium-radium-vanadium ore mining	$1,895,252	0.08%	35
Lessors of nonfinancial intangible assets	$1,871,061	0.08%	36
Retail – Non-store retailers	$1,709,788	0.07%	37
Other educational services	$1,596,922	0.07%	38
Scientific research and development services	$1,349,158	0.06%	39
Retail - Building material and garden equipment and supplies stores	$1,320,339	0.05%	40
Services to buildings	$1,311,629	0.05%	41
Support activities for agriculture and forestry	$1,301,007	0.05%	42
Management consulting services	$1,075,400	0.04%	43
Veterinary services	$1,067,626	0.04%	44
Limited-service restaurants	$1,003,636	0.04%	45
Funds, trusts, and other financial vehicles	$939,304	0.04%	46
Hotels and motels, including casino hotels	$834,704	0.03%	47
Employment and payroll of state government, non-education	$803,366	0.03%	48
Environmental and other technical consulting services	$792,458	0.03%	49
Retail - Food and beverage stores	$723,583	0.03%	50
Independent artists, writers, and performers	$704,979	0.03%	51
Extraction of natural gas and crude petroleum	$668,118	0.03%	52
Rail transportation	$660,470	0.03%	53
Offices of dentists	$658,576	0.03%	54
Full-service restaurants	$558,641	0.02%	55
Other personal services	$552,171	0.02%	56
Custom computer programming services	$532,057	0.02%	57
Employment and payroll of federal government, non-military	$441,244	0.02%	58
All other food and drinking places	$321,922	0.01%	59
Commercial and industrial machinery and equipment rental and leasing	$321,658	0.01%	60
Retail - Gasoline stores	$310,166	0.01%	61
Gambling industries (except casino hotels)	$300,638	0.01%	62
Wired telecommunications carriers	$257,701	0.01%	63
Personal and household goods repair and maintenance	$243,885	0.01%	64
Electronic and precision equipment repair and maintenance	$232,455	0.01%	65
Employment and payroll of federal government, military	$231,670	0.01%	66
Retail - Miscellaneous store retailers	$217,419	0.01%	67
Postal service	$196,698	0.01%	68
Retail - Motor vehicle and parts dealers	$182,292	0.01%	69
Grain farming	$161,850	0.01%	70
Retail - Health and personal care stores	$135,615	0.01%	71
Couriers and messengers	$116,138	0.00%	72
Automotive repair and maintenance, except car washes	$104,439	0.00%	73
Warehousing and storage	$91,208	0.00%	74

Economic Sectors	Value of Output ($)	Percent of Total (%)	Rank
Child day care services	$80,777	0.00%	75
Animal production, except cattle and poultry and eggs	$69,864	0.00%	76
Bread and bakery product, except frozen, manufacturing	$57,893	0.00%	77
Poultry and egg production	$57,136	0.00%	78
Commercial hunting and trapping	$21,426	0.00%	79
General and consumer goods rental except video tapes and discs	$10,667	0.00%	80
Labor and civic organizations	$7,167	0.00%	81
TOTAL	$2,423,264,175	100.00%	

APPENDIX C: METHODOLOGIES FOR VALUING AUMS

Tables C-1, C-2, and C-3 provide the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and maximum reductions in AUMs for Alternatives 1, 2, and 3 based on the cost of replacing the lost forage previously accessible under a Federal grazing permit with private forage. In the area of Nevada around Fallon, the cost of private forage replacement valuation was estimated to be $9.90 per AUM (U.S. Department of Agriculture, 2018).

Table C-1: Estimated Loss in Value of Output for Impacted Areas by Minimum and Maximum Reductions in AUMs for Alternatives 1, 2, and 3 ($9.90 per AUM)

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	$52,015	$69,112	$65,370	$91,070
Secondary	$15,924	$21,158	$20,012	$27,880
Total	$67,939	$90,270	$85,382	$118,950
Lander				
Direct	$9,930	$10,454	$9,930	$10,454
Secondary	$2,694	$2,837	$2,694	$2,837
Total	$12,624	$13,291	$12,624	$13,291
Mineral				
Direct	$356	$3,138	$2,109	$4,821
Secondary	$22	$192	$129	$295
Total	$378	$3,330	$2,238	$5,116
Pershing				
Direct	$337	$851	$337	$851
Secondary	$40	$100	$40	$100
Total	$377	$951	$377	$951
Plumas, CA				
Direct	$663	$1,356	$663	$1,356
Secondary	$191	$391	$191	$391
Total	$854	$1,747	$854	$1,747

Table C-2: Estimated Employment Loss for Impacted Counties by Minimum and Maximum Reductions in AUMs for Alternatives 1, 2, and 3 ($9.90 per AUM)

Area	Alternatives 1 and 2		Alternative3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	0.73	0.97	0.92	1.28
Secondary	0.12	0.17	0.16	0.22
Total	0.85	1.14	1.08	1.50
Lander				
Direct	0.15	0.16	0.15	0.16
Secondary	0.02	0.02	0.02	0.02
Total	0.17	0.18	0.17	0.18
Mineral				
Direct	0.01	0.12	0.08	0.19
Secondary	0.00	0.00	0.00	0.00
Total	0.01	0.12	0.08	0.19
Pershing				
Direct	0.00	0.01	0.00	0.01
Secondary	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.00	0.01
Plumas, CA				
Direct	0.00	0.01	0.00	0.01
Secondary	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.00	0.01

Table C-3: Estimated Labor Income Reductions for Impacted Counties by Minimum and Maximum Reductions in AUMs M for Alternatives 1, 2, and 3 ($9.90 per AUM)

Area	Alternatives 1 and 2		Alternative3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	$18,924	$25,144	$23,783	$33,133
Secondary	$5,181	$6,884	$6,510	$9,071
Total	$24,105	$32,028	$30,293	$42,204
Lander				
Direct	$3,802	$4,003	$3,802	$4,003

Area	Alternatives 1 and 2		Alternative3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Secondary	$509	$536	$509	$536
Total	$4,311	$4,539	$4,311	$4,539
Mineral				
Direct	$12	$101	$68	$156
Secondary	$4	$32	$22	$50
Total	$16	$133	$90	$206
Pershing				
Direct	$73	$184	$73	$184
Secondary	$12	$31	$12	$31
Total	$85	$215	$85	$215
Plumas, CA				
Direct	$148	$302	$148	$302
Secondary	$52	$105	$52	$105
Total	$200	$407	$200	$407

The second method evaluated for valuing AUMs was to use a cow-calf costs and return budget developed for Eureka County by Curtis et al. (2005). Under that methodology, the AUM value of production was estimated to be $38. This value was based on production practices and materials considered typical of a well-managed beef cattle operation in the region as determined by a producer panel conducted in November of 2004 (over 15 years ago); however, costs, materials, and practices are not applicable to every operation because production practices vary among ranchers within the region (Curtis et al., 2005). Tables C-4, C-5, and C-6 provide the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and maximum reductions in AUMs for Alternatives 1, 2, and 3 under this methodology.

Table C-4: Estimated Loss in Value of Output for Impacted Areas by Minimum and Maximum Reductions in AUMs for Alternatives 1, 2, and 3 ($38 per AUM)

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	$199,652	$265,278	$250,914	$349,562
Secondary	$61,122	$81,212	$76,813	$107,014
Total	$260,774	$346,490	$327,727	$456,576
Lander				
Direct	$38,114	$40,128	$38,114	$40,128
Secondary	$10,340	$10,890	$10,340	$10,890
Total	$48,454	$51,018	$48,454	$51,018
Mineral				
Direct	$1,368	$12,046	$8,094	$18,506
Secondary	$85	$737	$495	$1,132
Total	$1,453	$12,783	$8,589	$19,638
Pershing				
Direct	$1,292	$3,268	$1,292	$3,268
Secondary	$153	$384	$153	$384
Total	$1,445	$3,652	$1,445	$3,652
Plumas, CA				
Direct	$2,546	$5,206	$2,546	$5,206
Secondary	$733	$1,501	$733	$1,501
Total	$3,279	$6,707	$3,279	$6,707

Table C-5: Estimated Employment Loss for Impacted Counties by Minimum and Maximum Reductions in AUMs for Alternatives 1, 2, and 3 ($38 per AUM)

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	2.80	3.72	3.53	4.91
Secondary	0.46	0.66	0.62	0.84
Total	3.26	4.38	4.15	5.76
Lander				
Direct	0.58	0.61	0.58	0.61
Secondary	0.08	0.08	0.08	0.08
Total	0.66	0.69	0.66	0.69

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Mineral				
Direct	0.04	0.46	0.31	0.73
Secondary	0.02	0.21	0.14	0.33
Total	0.06	0.67	0.45	1.06
Pershing				
Direct	0.01	0.04	0.01	0.04
Secondary	0.00	0.00	0.00	0.00
Total	0.01	0.04	0.01	0.04
Plumas, CA				
Direct	0.01	0.04	0.01	0.04
Secondary	0.01	0.02	0.01	0.02
Total	0.02	0.06	0.02	0.06

Table C-6: Estimated Labor Income Reductions for Impacted Counties by Minimum and Maximum Reductions in AUMs for Alternatives 1, 2, and 3 ($38 per AUM)

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Churchill				
Direct	$72,637	$96,512	$91,288	$127,177
Secondary	$19,887	$26,423	$24,988	$34,818
Total	$92,524	$122,936	$116,276	$161,995
Lander				
Direct	$14,593	$15,366	$14,593	$15,366
Secondary	$1,954	$2,057	$1,954	$2,057
Total	$16,547	$17,423	$16,547	$17,423
Mineral				
Direct	$46	$388	$261	$599
Secondary	$15	$123	$84	$192
Total	$61	$511	$345	$791
Pershing				
Direct	$280	$708	$280	$708

Area	Alternatives 1 and 2		Alternative 3	
	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production	Minimum Reduced Cattle Production	Maximum Reduced Cattle Production
Secondary	$46	$115	$46	$115
Total	$326	$824	$326	$824
Plumas, CA				
Direct	$568	$1,159	$568	$1,159
Secondary	$200	$404	$200	$404
Total	$768	$1,563	$768	$1,563

The third methodology evaluated considered the contribution of a Federal grazing permit to the market value of a ranch property as a whole. Tables 7 through 12 provide the estimated loss in value of output, employment loss, and labor income reductions for impacted areas by minimum and maximum reductions in AUMs for Alternatives 1, 2, and 3 under this methodology.

Table C-7. Estimated Reduction in Value of Output for Impacted Counties for Minimum and Maximum Reductions in AUMs Valued at $100 per AUM and $350 per AUM for Alternatives 1 and 2

Area	ALTERNATIVE 1 and 2 at $100 per AUM		ALTERNATIVE 1 and 2 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	$525,400	$698,100	$1,838,900	$2,443,350
Secondary	$131,326	$174,494	$459,642	$610,728
TOTAL	$656,726	$872,594	$2,298,542	$3,054,078
Lander				
Direct	$100,300	$105,600	$351,050	$369,600
Secondary	$27,157	$28,592	$95,049	$100,072
TOTAL	$127,457	$134,192	$446,099	$469,672
Mineral				
Direct	$3,600	$31,700	$12,600	$110,950
Secondary	$271	$2,384	$948	$8,345
TOTAL	$3,871	$34,084	$13,548	$119,295
Pershing				
Direct	$3,400	$8,600	$11,900	$30,100
Secondary	$296	$750	$1,037	$2,626
TOTAL	$3,696	$9,350	$12,937	$32,726

Area	ALTERNATIVE 1 and 2 at $100 per AUM		ALTERNATIVE 1 and 2 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Plumas, CA				
Direct	$6,700	$13,700	$23,450	$47,950
Secondary	$1,934	$3,955	$6,769	$27,400
TOTAL	$8,634	$17,655	$30,219	$75,350

Table C-8. Estimated Reductions Value of Output for Impacted Counties for Minimum and Maximum Reductions in AUMs Valued by $100 per AUM and $350 per AUM for Alternative 3

Area	ALTERNATIVE 3 at $100 per AUM		ALTERNATIVE 3 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	$660,300	$919,900	$2,311,050	$3,219,650
Secondary	$165,045	$229,934	$577,658	$804,768
TOTAL	$825,345	$1,149,834	$2,888,708	$4,024,418
Lander				
Direct	$100,300	$105,600	$351,050	$369,600
Secondary	$7,544	$7,942	$26,404	$27,799
TOTAL	$107,844	$113,542	$377,454	$397,399
Mineral				
Direct	$21,300	$48,700	$74,550	$170,450
Secondary	$1,602	$3,663	$5,607	$12,820
TOTAL	$22,902	$52,363	$80,157	$183,270
Pershing				
Direct	$3,400	$8,600	$11,900	$30,100
Secondary	$296	$750	$1,037	$2,624
TOTAL	$3,696	$9,350	$12,937	$32,724
Plumas, CA				
Direct	$6,700	$13,700	$23,450	$47,950
Secondary	$1,934	$3,955	$6,769	$27,400
TOTAL	$8,634	$17,655	$30,219	$75,350

Table C-9. Estimated Employment Reductions for Impacted Counties for Minimum and Maximum Reductions in AUMs Valued by $100/AYM and $350 per AUM for Alternatives 1 and 2

Area	ALTERNATIVE 1 and 2 at $100 per AUM		ALTERNATIVE 1 and 2 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	3.03	4.03	10.62	14.11
Secondary	1.55	2.06	5.43	7.22
TOTAL	4.59	6.09	16.05	21.33
Lander				
Direct	1.51	1.59	5.29	5.57
Secondary	0.26	0.27	0.90	0.95
TOTAL	1.77	1.86	6.19	6.52
Mineral				
Direct	0.14	1.20	0.48	4.19
Secondary	0.00	0.03	0.01	0.11
TOTAL	0.14	1.23	0.49	4.30
Pershing				
Direct	0.01	0.03	0.04	0.05
Secondary	0.01	0.01	0.02	0.05
TOTAL	0.02	0.04	0.05	0.09
Plumas, CA				
Direct	0.03	0.06	0.11	0.21
Secondary	0.02	0.04	0.07	0.14
TOTAL	0.05	0.10	0.18	0.36

Table C-10. Estimated Employment Reductions for Impacted Counties for Minimum and Maximum Reduction in AUMs Valued by $100/AYM and $350 per AUM for Alternative 3

Area	ALTERNATIVE 3 at $100 per AUM		ALTERNATIVE 3 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	3.81	5.31	13.35	18.59
Secondary	1.98	2.72	6.83	9.51
TOTAL	5.79	8.03	20.18	28.11
Lander				
Direct	1.51	1.59	5.29	5.57
Secondary	0.26	0.27	0.90	0.95
TOTAL	1.77	1.86	6.19	6.52

Area	ALTERNATIVE 3 at $100 per AUM		ALTERNATIVE 3 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Mineral				
Direct	0.81	1.84	2.82	6.44
Secondary	0.02	0.05	0.07	0.16
TOTAL	0.83	1.89	2.89	6.60
Pershing				
Direct	0.01	0.03	0.04	0.05
Secondary	0.01	0.01	0.02	0.05
TOTAL	0.02	0.04	0.05	0.09
Plumas, CA				
Direct	0.03	0.06	0.11	0.21
Secondary	0.02	0.04	0.07	0.14
TOTAL	0.05	0.10	0.18	0.36

Table C-11. Estimated Labor Income Reductions for Impacted Counties for Minimum and Maximum Reductions in AUMs Valued by $100 per AUM and $350 per AUM for Alternatives 1 and 2

Area	ALTERNATIVE 1 and 2 at $100 per AUM		ALTERNATIVE 1 and 2 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	$248,634	$330,407	$870,218	$1,156,261
Secondary	$43,211	$57,415	$151,240	$200,953
TOTAL	$291,845	$387,822	$1,021,458	$1,357,214
Lander				
Direct	$38,403	$40,432	$134,410	$141,513
Secondary	$5,142	$5,414	$17,998	$18,949
TOTAL	$43,545	$45,846	$152,409	$160,462
Mineral				
Direct	$764	$6,727	$2,674	$23,545
Secondary	$69	$607	$241	$2,123
TOTAL	$833	$7,334	$2,915	$25,668
Pershing				
Direct	$2,914	$7,371	$10,199	$25,798
Secondary	$126	$318	$441	$1,114
TOTAL	$3,040	$7,689	$10,640	$26,912

Area	ALTERNATIVE 1 and 2 at $100 per AUM		ALTERNATIVE 1 and 2 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Plumas, CA				
Direct	$1,500	$3,066	$5,248	$10,732
Secondary	$522	$1,068	$1,828	$3,738
TOTAL	$2,022	$4,134	$7,076	$14,469

Table C-12. Estimated Labor Income Reduction for Impacted Counties for Minimum and Maximum Reductions in AUMs Valued by $100 per AUM and $350 per AUM for Alternative 3

Area	ALTERNATIVE 3 at $100 per AUM		ALTERNATIVE 3 at $350 per AUM	
	Minimum AUMs Lost	Maximum AUMs Lost	Minimum AUMs Lost	Maximum AUMs Lost
Churchill				
Direct	$312,472	$435,322	$1,093,653	$1,523,627
Secondary	$54,306	$75,657	$190,072	$264,800
TOTAL	$366,779	$510,979	$1,283,725	$1,788,427
Lander				
Direct	$38,403	$40,432	$134,410	$141,513
Secondary	$5,142	$5,414	$17,998	$18,949
TOTAL	$43,545	$45,846	$152,409	$160,462
Mineral				
Direct	$4,520	$10,335	$15,820	$36,171
Secondary	$408	$932	$1,427	$3,262
TOTAL	$4,928	$11,267	$17,247	$39,433
Pershing				
Direct	$2,914	$7,371	$10,199	$25,798
Secondary	$126	$318	$441	$1,114
TOTAL	$3,040	$7,689	$10,640	$26,912
Plumas, CA				
Direct	$1,500	$3,066	$5,248	$10,732
Secondary	$522	$1,068	$1,828	$3,738
TOTAL	$2,022	$4,134	$7,076	$14,469